# BRAITHWAITE'S RETROSPECT.

VOL. XXIX. JANUARY—JUNE, 1854.

THE

# RETROSPECT OF MEDICINE:

BEING

## A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY


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VOL. XXIX. JANUARY—JUNE.

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MDCCCLIV.

Our readers will perceive that the present volume has been printed in a much larger type. We have done this to save the eyes of our older readers, and without materially diminishing the quantity of matter.

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## AFFECTIONS OF THE SYSTEM GENERALLY.

AGUE.—In cases of the quotidian type, small doses of strychnia, one twenty-fifth to one-fiftieth of a grain, have proved very valuable in several cases of the poorer labourers at the Crystal Palace, who were much exposed at night. (Dr. F. E. Wilkinson, p. 59.)

DROPSY.—Give eight grains of calomel and eight grains of jalap with with one of emetic tartar, in the morning; and if necessary give a little wine and water during its operation. Follow this by three grains of powdered squill with two of digitalis, every night for six successive nights. At the same time give a mixture with bitter infusion, and small doses of tincture of squills and spirit of nitre, twice a day. Then omit the digitalis and continue the other medicines for six nights more. Occasionally the drastic purge will have to be renewed. (Mr. J. Toogood, p. 48.)

FEVER.—Fever in one sense is incurable, but, by proper management, it cures itself. "We cure the patient by preventing him from dying" during a certain period, and then the disease dies out; we keep him up by food, stimulants, and tonics. One of the most important doctrines of the day, is, that fever may produce local symptoms very like inflammation, but not really so; and if these local affections be treated on the antiphlogistic plan in cases of fever, it is probable that the results will be fatal. Therefore, in fever, although the patient be attacked *apparently* by inflammation of the brain, causing delirium, &c., dont deplete, but steadily support the patient by food and small and repeated doses of brandy or wine, say a teaspoonful or tablespoonful every hour or two. The same principle must be remembered in affections of the lungs, heart, and digestive organs. All or some one of them may be attacked by apparent inflammation, but dont deplete if you see typhus present. On the other hand, boldly give food and stimulants, till you see the brown tongue assuming a healthier aspect, notwithstanding the apparent inflammatory symptoms, as it is the rarest thing possible for real inflammation to co-exist with fever. (Dr. W. Stokes, p. 1–12.)

Where the secreting surface is not easily disorganized, we may try, by stimulating it, to aid in the elimination of the poison. This we may fulfil by emetics. Ipecacuan is the emetic to be preferred in ʒj. doses of the wine. It should be given during the early stages, while nausea already exists as a symptom. Fever terminates commonly in four ways; 1st. The patient may be struck down at once and die by the shock; 2nd. He may die from the first to the second week; in this case there is great febrile action, and the patient dies by phrenitis, or this perhaps conjoined to some other complication. 3rd. The cerebral symptoms may appear more gradually, as at the end of the second week, commencing with delirium, and if fatal, ending with coma. In the 4th class, he may die at the end of the third, fourth, or fifth week, the asthenia increasing, and accompanied, perhaps, by specific intestinal lesion. In the third class, where violent delirium is present, we must give opium and apply cold effusion to the shaven head. The opium may be guarded with ipecacuan. If coma comes on, large blisters must be applied. The strength must be sustained on the plan of Dr. Todd, by giving small quantities of brandy and water and beef-tea at frequent and short intervals, and it must be especially observed that severe febrile symptoms do not contra-indicate this method. In the fourth class we must relieve the pain and tympanitis in the bowels and peritoneal cavity by turpentine stupes. A turpentine enema may be also given in the following form: Spirit of turpentine, thirty minims; tincture of catechu, two drachms; tincture of opium, fifteen minims, to be added to ʒij. of decoction of starch. (Dr. W. Brinton, p. 16–25.)

*Tropical Fever and Dysentery.*—When the remissions are imperfect, and there is acute congestion of some important abdominal or other organ, give quinine (in ϑj. doses) from ʒj. to ʒij. daily. The more acute the symptoms and the less the remissions, the larger and earlier should be the doses. These doses should be continued until complete cinchonism is produced, namely, singing in the ears and deafness. In robust cases, before the accession of the fever, one blood-letting often gives great temporary relief. (Mr. E. Hare, p. 25–31.)

Gout, *Acute.*—Apply pure spirits of wine to the part by means of a piece of lint, and cover it with oil-silk. (Dr. Goolden, p. 45.)

*Chronic Gout and Rheumatism.*—Mix ʒj. of carbonate of soda with a bread poultice and apply this hot every night. (Dr. J. R. Bennett, p. 45.)

Purpura Hemorrhagica.—Give turpentine in the following manner: Sp. terebinth ʒij; sacchari albi, pulv. acaciæ, āā ʒij; tinct. lavand-comp. ʒj; aquæ menth. pip. ad ʒviij. M. fiat mistura. ʒj ter die. (Dr. G. Willis, p. 51.)

Rheumatism.—Almost all the salts which act on the kidney are useful. Lemon-juice seems to be useful chiefly by acting on the kidneys and from the supercitrate of soda or potass which it contain; for the same reason we may give citrate of ammonia, acetate of ammonia, and nitrate of potass. Dr. Golding Bird prefers acetate of potass. He gives half an ounce, largely diluted, in divided doses every twenty-four hours. (Dr. G. Bird, p. 41.)

Dissolve ℥iij. of nitrate of potash in a pint of water, let the whole be taken during the twenty-four hours. By this dose gastric and renal irritation is avoided, and the patient does not get disgusted with the drug as he is apt to do when the quantity taken is two or three ounces in the same period. (Dr. Rowland, p. 39.)

*Chronic Periosteal.*—Dr. Basham has observed that in cases of chronic periosteal rheumatism, where the patient has been benefited by iodide of potassium, at some antecedent period he has been salivated by mercury; whereas if no salivation has previously occurred, he has found the iodide of potassium of little or no effect. This disease may depend upon the impregnation of the system by mercury, or from the syphilitic virus. If the former, iodide of potassium is the remedy; if the latter, alterative doses of some mild preparation of mercury. (Dr. R. W. Basham, p. 44.)

Scarlatina.—When coma exists after or during an attack of scarlatina, the electro-galvanic battery has been found successful, the same as in cases of poisoning by opium. At the same time a flexible tube may be passed into the stomach, and port wine and ether introduced. (Dr. P. J. Murphy, *Lancet*, April 1, 1854, p. 360.)

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## AFFECTIONS OF THE NERVOUS SYSTEM.

Cerebritis.—When fever is present, of a typhus character, dont be afraid of the symptoms of inflammation in the exhibition of wine. When typhus is present there may seem to be local inflammation either in the brain, heart, or other organs, but this is not real inflammation, and will really be aggravated by depletion. (Dr. W. Stokes, *Edin. Med. and Surg. Journ.*, April 1, 1854, p. 364.)

Chorea, *Hysterical.*—Give ℥ss. doses of the syrup of the iodide of zinc, and calomel night and morning. (Dr. Barlow, p. 70.)

Epilepsy.—Let the patient live by rule, and take a proper degree of exercise. Act daily on the bowels twice by the following pills, mercurial pill one scruple, compound colocynth pill two scruples, make into twelve pills, and take one occasionally. Also take of the juice of the cotyledon umbilicus (Davenport's) one teaspoonful daily before breakfast. Avoid stimulants, suppers, balls, theatres, &c. Increase the juice by and by to two teaspoonfuls. (Dr. Joseph Williams, p. 57.)

Dr. F. E. Wilkinson corroborates Dr. Marshall Hall's statement of the value of strychnia, dissolved in acetic acid, in the treatment of epilepsy. (p. 58.)

Headache.—Simple congestive headache and other painful affections of the head may be relieved by what is called "traction," or dry cupping. The spine, and if necessary, the whole back is smeared with spermaceti ointment. The cupping glass is then exhausted and fixed on any given spot; it moves with facility over the anointed surface, acting powerfully as it goes along. This is very useful in hysterical headache. (Dr. P. J. Murphy, *Lancet, April* 1, 1854, p. 360.)

*Neuralgic and Hysterical.*—Generally depends on subacute ovaritis, and attacks the *left* side of the scalp, shooting from the neck to forehead and not vice versa, as in odontalgia. Use the following remedies according to circumstances: open the bowels well and and regularly; use the cold hip-bath or sea bathing; a sinapism or blister to the back of the neck; belladonna plaster with a little opium in it. Tonics, as quinine in an infusion of valerian; valerianate of zinc half a grain three times a day with one drop of creosote; sulphate of iron combined with valerian and ammonia, or the ammoniated tincture of valerian; morphine in doses of one-sixth or one quarter of a grain to relieve the pain, if other remedies fail. (Dr. P. J. Murphy, *Lancet, May* 20, 1854, 540.)

Neuralgia.—Where the simple carbonate of iron fails to give relief, give the saccharine carbonate of iron and manganese. (Dr. S. P. Speer, *Med. Times and Gazette, Dec.* 10, 1853, p. 599.)

Dissolve two grains of strychnia in ℥j. of phosphoric acid (P. L.), and give five minims three or four times daily, either alone or combined with some other remedy adapted to the nature of the case. (Dr. F. E. Wilkinson, p. 58.)

Sciatica.—In cases where sciatica depends on local irritation of the nerve within the pelvis from accumulation of fæces in the colon or cæcum, the following pills generally produce a good effect; the patient, however, should be warned of the activity of the remedy. Croton oil, one minim; blue pill, extract of hyosciamus, each four grains; compound extract of colocynth, eight grains; to be divided into four pills, two to be taken at night, and repeated as the case may be. (Mr. H. Hancock, p. 85.)

Solar Plexus, *Exhaustion of Nervous Power of the.*—Give the following, varying it according to the requirements of individual cases: Chloroform and tincture of ginger, of each half an ounce; aromatic spirit of ammonia, two drachms; mix. Twenty-five drops to be taken thrice daily in a wineglassful of milk. (Prof. Osborne, p. 85.)

Sensation, *Loss of from Hysteria.*—A case of this kind in a young woman, aged 25, which various remedies failed to relieve, was gradually cured by the patient persevering in taking the following, in the form of a draught, three times a day. Tinct. ferri sesq., ℥xv.; tinct. cantharid. ℥iv.; and tincture of aloes, ℥xx. (Dr. Rowland, p. 80.)

Tetanus.—Belladonna may be given in large doses. Give one grain every two hours, and increase this dose to one and a half grains, using also occcasionally a suppository with three grains in it. Watch the pupil; if it dilate, gradually desist from the belladonna. (Mr. Booth Eddison, *Med. Times and Gazette, April* 15, 1854, p. 378.)

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## AFFECTIONS OF THE CIRCULATORY ORGANS.

Nævus.—Use a pretty little syringe (figured at page 292) made of glass, with an accurately adapted piston, and ending in a narrow platinum tube, with a trocar point; first introduce a narrow-bladed tenotomy knife into the nævus subcutaneously, break its structure up well and then introduce the point of the syringe charged with the perchloride of iron, and force out a few drops; then withdraw the instrument, and during its withdrawal, in order to prevent bleeding, a little more of the solution is to be injected so as to plug the orifice by the coagulum formed. If the tumour be large, repeat this operation in two or three places. (Mr. C. Forster, p. 292.)

Apply on a piece of thin leather, cut accurately to the size of the tumour, a compound of fifteen grains of tartar emetic to ʒj. of galbanum plaster. Inflammatory action is set up and the vessels obliterated. (Dr. Cumming, p. 294.)

Pericarditis.—Whenever the fever present is of a typhus character wine is required. (Dr. W. Stokes, p. 7.)

Varicose Veins.—In a case of large varicosity of the saphena vein, injection of the perchloride of iron produced coagulation and effected a cure. (M. Follin, p. 295.)

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## AFFECTIONS OF THE RESPIRATORY ORGANS.

Asphyxia *of Infants.*—Galvanism is most useful in exciting respiration in this condition. (Dr. Barnes, p. 384.)

Asthma.—Twenty drops of chloroform inhaled in the handkerchief and repeated carefully, taking care not to produce stupefaction, produced marked relief in a case of severe asthma. (Dr. R. Reynolds, p. 72.)

Ten minims of tincture of lobelia, with sedatives, expectorants, or stomachics, is very useful in chronic bronchitis, with tendency to paroxysmal asthma. If the nausea be very excessive, combination with a few drops of hydrocyanic acid is often useful. (p. 118.)

*Nervous.*—Brown paper soaked in a solution of nitrate of potash and burnt in the room of an asthmatic patient will give instant relief. The following pharmaceutical paper is still better: Pasteboard broken down in hot water, four ounces; nitrate of potash, two ounces; belladonna, stramonium, digitalis, lobelia inflata, all in powder, each twenty grains; myrrh and olibanum, of each two and a half drachms. Incorporate all these with the paste, divide the mass into sheets of the thickness of three lines; dry, and divide in little square pieces. Burn them in little saucers in a well shut-up room. (M. Carrie, p. 118.)

Hemoptysis.—In hemorrhage from the lungs preceding tubercular deposit, we should not always be in haste to check it, as it may relieve congestion. We should determine the blood rather to other organs, than give direct astringents. Alum dissolved in the mouth is one of the best astringents. Take of powdered gum arabic and of white sugar, each three drachms, powdered tragacanth one and a half drachms, alum two drachms, catechu three drachms, rose-water sufficient to form sixty lozenges. Acetate of lead is preferable to gallic acid, and turpentine is one of the most certain styptics in such cases. (Dr. T. Thompson, p. 117.)

Hooping-cough.—As hooping-cough seems to be the elimination of some poison in the blood, we must endeavour to find an antidote to it. As we know of no antidote, we are obliged to let the patient cough the disease away, guarding him against the bad consequences, and protecting him from the complications. The disease is not an inflammatory condition of any part, therefore any antiphlogistic treatment does harm by weakening the patient and impoverishing the blood. The first thing is to guard against bronchitis and pneumonia, by affording a well-regulated temperature. Then we must uphold the strength by keeping the patient well nourished. The chest may be also sponged with water once or twice a day: of remedies, the sedative, anti-spasmodic class is the best for allaying the irritability of the parts, as the preparations of opium, henbane, conium, belladonna, and hydrocyanic acid. Depressing drugs should be avoided, as tartar emetic and ipecacuan. The careful inhalation of chloroform deserves a trial, but only in small quantities. Splashing the chest with cold water is also valuable, taking care not to wet the head, and that the temperature of the room be warm when it is done. (Dr. R. B. Todd, p. 99.)

Let a few drops of chloroform be inhaled on a handkerchief when the attack is felt coming on. (Dr. F. Churchill, p. 104.)

PHTHISIS, *Diarrhœa of.*—Give five grains of trisnitrate of bismuth combined with three grains of gum arabic, and two of magnesia, every four or six hours. (Dr. T. Thompson, p. 116.)

*Night perspirations of.*—Give four grains of oxide of zinc, and four grains of extract of hyosciamus, made into two pills, every night for a time. (Dr. T. Thompson, p. 117.)

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## AFFECTIONS OF THE DIGESTIVE ORGANS.

CHOLERA.—Immediately wrap the patient in a sheet wrung out of boiling water with a dry blanket over the sheet. The purging is to be checked by appropriate means; if it continue, with vomiting and thirst, large quantities of cold water are not to be allowed; but small quantities of iced water, or portions of ice. Afterwards, he may have a teaspoonful of brandy and half a wine-glassful of soda-water every five or ten minutes; or ten minims of laudanum in soda-water, with or without brandy, as it may suit the stomach. A solution of the nitro-muriatic acid is useful sometimes, given with a little syrup of poppies. (Mr. Barwell, *Monthly Journal, Jan.* 1854, p. 50.)

Mix from ℥ ss. to ℥j. of the undiluted nitrous acid, according to the severity of the symptoms, in from ℥iv. to ℥vj. of some aromatic waters. If there be restlessness and pain, add forty minims of laudanum. A quarter of this mixture to be given every two, three, or four hours according to the urgency of the vomiting and purging. It may be given in a cup of thin gruel, nearly cold. If rejected, it may be repeated in ten minutes. No food should be taken for half an hour afterwards. (Mr. R. H. Whiteman, *Assoc. Med. Journal, Dec.* 2, 1853, p. 1063.)

1. The "rice water" vomit and purging require to be energetically subdued by quinine, sulphuric and other acids, creasote, nitrate of silver, and such like remedies. 2. In actual and threatened collapse, external warmth, stimulant embrocations, and those internal stimulants which act on the capillaries, are of signal benefit. 3. In reaction, and during convalescence, local inflammations and congestions require to be guarded against or subdued; and rational means must be adopted to restore the secretions of the liver, kidneys, and skin, but particularly of the two former. 4. Lastly, though not of less importance, the character of the fever should be modified, and a repetition of the paroxysm guarded against, by change of air, or by the administration of quinine, which, in the majority of cases, from the existence of anemia, ought to be conjoined with iron. (Dr. Cormack, *Assoc. Medical Journal, Nov.* 11, 1853, *p.* 993.)

Dyspepsia, *from Defective Action of Excreting Organs.*—Enjoin a light and simple diet, with water for drink, fresh air and exercise, and medicines that increase the secretions of the liver, kidney, and bowels. Blue pill and black draught do well enough for strong people. In other cases, 15 grains of sesquicarbonate of soda, and as much potassio-tartrate of soda as will act gently on the bowels, may be given. To relieve the acidity, fifteen grains of the bicarbonate of soda or the bicarbonate of potash may be given two or three times a day, two or three hours after the principal meals. At the same time keeping up a free action of the bowels by blue pill, or colocynth with henbane. If total abstinence is not feasible, the best drink is pale sherry or brandy largely diluted with water. If we have oxalic acid deposit and freedom from red deposit, the best remedy is the nitro-muriatic acid, eight to twenty minims of each twice a day in a glass of water half an hour before breakfast and half an hour before dinner. If there be a red deposit, however, from lithic acid or lithate of ammonia, give, instead of the mineral acid, the carbonate or the aromatic spirit of ammonia. Sugar in this kind of cases should as much as possible be avoided. (Dr. G. Budd, p. 126.)

*Slow and Imperfect Digestion.*—We must first give remedies which increase the flow of gastric juice. The diet and habits must be regulated. The stomach must not be oppressed by new bread, tough meat, or malt liquors; and bodily fatigue, and nervous exhaustion must be avoided. Half to two grains of ipecacuan; three or four grains of rhubarb, or these with a grain of capsicum in a pill, may be given before dinner. Salt and mustard are also stimulants. Ipecacuan would seem to be the most powerful of any of these. A glass of water and a lump of sugar after a meal will sometimes relieve the uneasiness. The muriatic and nitro-muriatic acid taken half an hour before meals are also useful. Alkalies must not be given as they weaken the gastric juice. If the food undergoes fermentative changes, and sulphuretted hydrogen are given off, producing belchings like rotten eggs, half a minim of creosote may be given in a pill at the time of meals. If the fermentative change be accompanied by distension and eructation of inodorous gas, (carbonic acid), nitro-muriatic acid and the stimulant dinner pills just named will be useful. If the fermentative change produce lactic acid, then we have every thing taken turning to an acid; in this case we must give alkalies, and before meals bismuth and magnesia, and brace the walls of the stomach with the mineral acids, especially the sulphuric. (Dr. G. Budd, p. 120.)

When the food lies heavy on the stomach, as in people at the turn of life who lead sedentary lives, give small doses of ipecacuanha, from a quarter of a grain to two grains, in the morning fasting, so

as to cause a slight feeling of vermiculating motion of the stomach, but not to cause nausea, and gradually increase the dose if necessary: one grain may be mixed with two grains of rhubarb, and given just before meals. Small doses of rhubarb, ginger, and pepper; one grain of rhubarb, with one grain of cayenne pepper in the form of a pill, also give relief in these cases.

*Painful Digestion.*—Bismuth is one of the best medicines when pain, or cramp accompanies digestion, and where there is no ulceration, It restrains undue secretion, and thus differs from ipecacuanha, which promotes it. It is best given a short time *before* meals ex. g., ten grains three times a day. Another good medicine in such cases is hydrocyanic acid, which is chiefly useful to relieve pain of the stomach when it is empty of food; combine it with soda. (Dr. G. Budd, p. 135.)

*Accompanied with Oxalate of Lime in the Urine.*—A solid animal diet with little bread and vegetables, no fruit, very little sugar, or vegetable acid. Give the mineral acids. These do for oxalate of lime what the alkalies do for uric acid deposits. Give each acid separately. Give dilute sulphuric acid when an astringent is wanted, as in colliquative perspiration, menorrhagia, hemoptysis, and diarrhœa: hydrochloric acid when digestion requires assisting. The stomach liberates this acid for the purpose of digestion. Give both this and the dilute sulphuric acid before the meals. Give dilute nitric acid when the secretion requires to be increased; it is the opposite of sulphuric acid in its action. Sulphuric acid, therefore, astringes; hydrochloric promotes digestion; nitric promotes secretion. To prevent these acids acting on the teeth, wash the mouth out with a teaspoonful of aromatic spirit of ammonia in a little water immediately after taking them. They should all be taken on an empty stomach. (Dr. Bence Jones, *Medical Times, May* 6, 1854, *p.* 454.)

*Prolonged Dyspepsia.*—Dissolve two grains of strychnia in ℥j. of phosphoric acid (P. L.); five minims of this solution may be given three or four times daily in cases of prolonged dyspepsia, and where the nervous system requires tone. (Dr. F. E. Wilkinson, p. 58.)

Dysentery, *Tropical.*—(See "Tropical Fever.")

Hemorrhoids.—In using nitric acid, the strongest possible should be procured, not that which is usually kept by chemists. The best way of applying the acid is by using some instrument which will encircle the base of the tumours, hold them in their situation, and sufficiently press upon them so as to prevent hemorrhage. If necessary, any portions of the tumours may be removed, the parts wiped dry, and the acid at once applied to the surface. There are two classes of

these tumours, one which is soft and vascular and very liable to bleed, and another which is firmer and which does not bleed. For the first the best treatment is the nitric acid application, but for the second the nitric acid is not sufficiently strong. For these Mr. Lee has invented a pair of broad forceps (see diagram, page 312) by which he grasps the tumour, and a portion of it near the operator is removed with the curved knife. The cut surface is then touched with the acid or with the actual cautery, and the parts returned into their natural position. If the portion cannot be protruded, then Mr. Lee has operated in another way. A rectum speculum is introduced having a slide; the opening is applied against the tumour, and when the tumour has bulged in to the speculum, the slide is placed in the groove and the tumour firmly held between it and the rest of the instrument. A long narrow knife is introduced within the speculum a portion of the tumour cut off and the nitric acid or the actual cautery applied. (Mr. H. Lee, p. 309.)

Mr. Steel relates a case of this disease, which he treated successfully by the galvanic cautery. (p. 313.)

Hernia, *Inguinal.*—The evidences of a hernia having been reduced *en masse*, are: 1st. The signs of strangulation continuing after the apparent reduction; 2nd. The loss of the hernial sac; 3rd. A feeling of fulness at the internal ring, and of an ill-defined firm swelling in the abdomen behind or below the ring; 4th. A disproportionate amount of pain in this part to that which exists in the other part of the abdomen; 5th. The usual drawing up of the testicle. (Mr, J. Paget, p. 299.)

Push part of the skin of the scrotum up the inguinal canal with the finger, withdraw the finger and introduce in its stead an instrument used by M. Wutzer, (consisting of a wooden cylinder, a needle passing through it, an outer wooden case, and a screw to bind the case and cylinder together). Pass the needle up and pierce through both sac and integument so as to stitch, as it were, the sac and invaginated scrotal skin to the abdominal skin. The instrument is kept in for several days and a certain degree of inflammation is thus excited which blocks up the canal. (Mr. Spencer Wells, *Lancet*, *May* 20, 1854, p. 542.)

Pyrosis.—Give a combination of astringent and sedative remedies, as five grains of bismuth with 1-12th of a grain of the muriate of morphia, or five grains of the compound kino powder, or an efficient dose of catechu, krameria, or logwood, with opium, two or three times a day. Astringents are useful sometimes, as half a grain of argent. nit. three times a day; or three to five grains of nux vomica three times a day; or quinine, or the mineral acids. If there be anemia present, steel should be given. (Dr. G. Budd, p. 139.)

Rupture Truss.—For a description and diagram of Dr. Arnott's new rupture truss with screw adjustments, see p. 304.

Sarcinæ Ventriculæ.—This disease is easily recognised by the vomited matter fermenting, both the foam on its surface and the sediment thrown down containing abundance of sarcinæ and torulæ. The fermentative process may be checked by giving half a minim of creosote in a pill at each meal. Common salt has the same effect. Bisulphite of soda from the liberation of sulphurous acid, has the same power. It may be given in doses of ʒss. to ʒj. in water, two or three times a day. To regulate the bowels give aloetic or colocynth pills. (Dr. G. Budd, p. 140.)

Tænia.—Give tannic acid. This we might infer from analogy would be beneficial from its action on gelatine and albumen, both of which these parasites contain. (Prof. Osborne, p. 158.)

The seeds of the pumpkin contain a fixed oil, half an ounce of this given twice a day, followed by an ounce of castor oil has proved very effectual. (Prof. Paterson, p. 159.)

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## AFFECTIONS OF THE URINARY ORGANS.

Diabetes.—It may be observed that porter increases the sugar in diabetic urine; but claret and spirits, as brandy, whisky, and rum, do not; and what is more important still, milk scarcely increases it at all, even when the diet consists mainly of it, as the milk sugar is not easily converted into glucose within the body. As diabetic patients sometimes go off phthisical, cod-liver oil is a valuable remedy, and large quantities of it may be taken in this disease. (Dr. Bence Jones, p. 176.)

Give lime-water and hartshorn. This was a prescription of Dr. Colles, of Dublin, and, though unable to explain the reason of its value, it proved nevertheless in many cases successful. (Sir H. Marsh, Bt., p. 185.)

The following was the treatment in a successful case of this disease. The diluted mineral and hydrocyanic acids were taken for some months. The diet was limited to butcher's-meat, fish, eggs, milk, and bran-bread. Fresh vegetables, such as cabbages, were taken occasionally. Brandy and water was allowed as a drink. A dose of rennet was taken after each meal. (Dr. H. Fearnside, p. 185.)

The following treatment has proved very useful. A meat diet; a warm bath each alternate day, three grains of Dover's powder three times a day, and five grains of the same with five of anti-

monial powder at bed-time; with saline draughts of the phosphate of soda and tartrate of potash to regulate the bowels. (Dr. W. R. Basham, p. 181.)

Kidneys, *Passive Hemorrhage from.*—Give gallic acid in the following form. Gallic acid ʒj.; dilute hydrochloric acid ʒij.; solution of hydrochlorate of morphia (E. P.) ʒj.; distilled water, ℥vss. A tablespoonful to be taken every fourth hour. (Dr. E. G. Crooke, p. 204.)

Oxaluria.—In a case of this disease marked by the presence of dumb-bell crystals, after other remedies had failed, one grain of nitrate of silver was given every six hours. In two days it was diminished to half a grain, and ʒj. of the acidulated tincture of calumba was given night and morning. It should be observed, that where oxalate of lime appears in octohedral crystals, the nitro-muriatic acid with a vegetable tonic will generally effect a cure. If the dumb-bell form appears, nitrate of silver is very useful. Where both kinds of crystals are present, these medicines should be given alternately. (Dr. J. Gray, p. 194.)

Spermatorrhœa.—Where physical weakness is a prominent symptom, quinine has an undoubted efficacy in controlling the *night* discharges of spermatorrhœa. Spirit of camphor is the best remedy for relieving the obstinate erections which sometimes remain after gonorrhœa, a teaspoonful for a dose. Gymnastic exercise is an excellent means of controlling spermatorrhœa. The best plan is to rise at six in the morning, sponge with cold salt water, use the dumb-bells for half an hour, and follow this up with a brisk walk. For both the night and day discharges, opium is a most valuable remedy. If the costiveness is obstinate, let the patient take a pill of gentian with 1-12th of a grain of strychnia, with a tumbler of unsweetened gin and water at night, and one of cold water in the morning. If the urine scalds, and the patient complains of spasmodic pain at the neck of the bladder, and the urine be loaded with lithates, or clouded with mucus, we may give the nitro-muriatic acid with laudanum, in the decoction of pareira brava or chimaphila. In cases of extreme uneasy sensation or creeping along the vas deferens or urethra, veratria ointment, or some mild counter-irritant are the most useful applications. The caustic holder is not to be regarded as *the remedy*, because in truth, it is not often called for. In cases complicated with gleet, where the cautery has failed, blistering is the best remedy. A good instrument for applying the caustic is a platinum canula with stilette. After introduction, the stilette is withdrawn, and a bougie passed down prepared thus: the tip being scraped rough, it is rolled in fused caustic, and this again in melted tallow, by which means a thin film of caustic is secured. (Mr. J. L. Milton, p. 338.)

The indigestion in this disease is best relieved by aromatic confection, with sulphite of soda and mint water. Before resorting to the caustic bougie, the sensitiveness of the urethra must be diminished by occasional blisters and injections. In prostatic gleet, a blister repeated two or three times has cured the patient after all other treatment had failed. The same in night discharges. Quinine may be given subsequently. (Mr. J. L. Milton, p. 342.)

Stricture of the Urethra.—If we wish to know whether the bougie is pressing against the walls of the urethra, or has entered the stricture, we must draw it gently back; if the latter, we shall meet with some degree of resistance as if it had been grasped by some contracted orifice. If the stricture be long and callous, the bougie may cease to advance, and in this case it should be withdrawn and a larger one introduced. Catgut bougies are going out of use; the common plaster ones are not very convenient, but they must be employed where the contracted parts are tortuous and of small calibre. Mr. Liston, however, rejected them altogether, and if the stricture was moderate, used a plated metal bougie, and if very tight, a small silver catheter. Mr. Lawrence is another high authority in favour of metallic sounds. Having been passed, the instrument should remain in the urethra a short time, and then be withdrawn, introducing it again on the third day, and if it is well borne, introducing it daily, and allowing it to remain a longer time, so as gradually to dilate the strictured part. This is a good but a tedious plan, and some surgeons prefer introducing a small instrument first, and then immediately passing in rapid succession two or three of a larger size, until the patient complains of weariness or pain. Permanent dilatation is effected by passing an instrument and allowing it to remain forty-eight hours or longer, according to the case, then this is withdrawn and a gum-elastic catheter substituted. This may be left for from two to six days; it is then withdrawn and a larger instrument passed, and so on until the dilatation is complete. For this purpose Mr. Wakley's instruments are very useful, consisting of silver and flexible tubes of graduated sizes. (Mr. W. Coulson, p. 323.)

Syphilis, *Congenital.*—The mildest preparations of mercury given in children are apt to run off by the bowels; to obviate this, let a piece of flannel smeared with mercurial ointment be worn constantly over the child's belly. If the child be at the breast, mercury should be administered to the mother also. (Mr. Wormald, p. 346.)

Urine.—When alkalescent from *fixed alkali* it is from the stomach. Take more air and exercise, with mild nutritious food. Give vegetable acids, as lemon-juice or citric acid, but not tartaric. Seventeen grains of dry citric acid are about equal to half an ounce of

lemon-juice, and one lemon generally gives one ounce of juice. Twelve ounces of lemon-juice, equal to 408 grains of citric acid may be given in one day if necessary.

When alkalescent from *volatile alkali*, it arises from affection of the mucous membrane of the bladder. In this case buchu, pareira brava, turpentine, cubebs, copaiba are used. Buchu is given when pus is present; pareira brava when there is ropy mucus. Buchu is good when the urine is acid, pareira when it is alkaline; in short, when you want a stimulant give buchu, when you want a demulcent give pareira brava, when you want an astringent give uva ursi. (Dr. Bence Jones, p. 198.)

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## AFFECTIONS OF THE SKIN, ETC.

Corns.—They can be enucleated. Pass a penknife vertically round the corn for the full depth of the indurated cuticle in the situation of the marginal line. Then lift out the corn by evulsion, or rather by enucleation. (Dr. F. J. Brown, p. 361.)

Eczema.—Make an ointment as follows: Oil of juniper ℥iss, suet ℥ss., lard ℥iss. It should be applied locally to the part. (Dr. Routh, p. 360.)

Erysipelas.—Wrap the part in a thick sheet of cotton-wool. Smearing the part over with a thick coat of white paint is a very useful, but not an agreeable remedy. (Dr. Goolden, p. 361.)

Favus.—After removing the crusts of favus by poulticing and shaving the head, keep the surface moist with cod-liver oil, or use Dr. Jenner's lotion, composed of one part of sulphurous acid mixed with three parts of water, in the following way: saturate lint with this lotion and apply it all over the scalp night and morning, keeping it moist by an oil-silk cap. (Dr. J. H. Bennett, p. 357.)

Itch.—First rub the body well over with brick-dust, which exposes the acari to the sulphur ointment. Next rub the sulphur ointment well into the skin for half an hour, and then wash well with soap and water. The cure will sometimes be complete in a couple of hours. (p. 360.)

Pemphigus.—Arsenic is almost a specific remedy in the worst cases of this disease, as it remedies the unknown constitutional cause upon which the disease depends. It does not prevent the liability to return, but it renders the attacks less severe than the original one. (Mr. J. Startin, p. 358.)

Pityriasis Versicolor.—Use a wash of bichloride of mercury, (gr. j. to ℥j.) (Mr. J. Paget, p. 359.)

Apply sulphurous acid. At the Skin Hospital Dr. Jenner gives arsenic internally; and a mercurial lotion is also used. (p. 360.)

Psoriasis.—In obstinate psoriasis, try pitch in the form of pills. Begin with ten common-sized pills three times a day. The dose may be increased if necessary to 60, 70, or 80 pills a day. (Mr. J. Toogood, p. 358.)

Scaly Disease of the Skin.—In these and scrofulous and cancerous diseases the galium aparine is proving very valuable. Mr. Hooper prepares an inspissated juice, a tea-spoonful equalling half a pint of the decoction; ℥j. of this juice may be taken three times a day. (Dr. Winn, p. 47.)

Small-Pox, *Abortive Treatment.*—Apply to the face the following plaster:—Carbonate of zinc, three parts; oxide of zinc, one part; rubbed in a mortar with olive oil to a proper consistence. This may be used throughout the case, and renewed from time to time. (Dr. Hughes Bennett, p. 52.)

Ulcer, *Callous.*—The primary obstacle to the successful treatment of this ulcer is the presence of a compact and effete solid ring of cuticle. This must be excised by carefully shaving off the accumulated cuticle without wounding the cutis. (Mr. J. Hainworth, p. 347.)

*Cancerous.*—Mr. Weedon Cooke recommends a carrot poultice to be applied to cancerous sores when offensive. It should be changed every few hours. Mr. Chatterley says that wood soot (not powdered charcoal) answers very well for the same purpose. The wood soot should be sprinkled from an ordinary tin pepper box, on the outside of the other dressings used. It may be obtained from chimneys of fire-places in which wood and nothing else is burned, or from the ovens of ham and bacon curers. (*Medical Times and Gazette, April* 15, 1854, *p.* 464.)

*Phagedænic.*—In an extensive case of this kind in the groin, when all treatment to stay its progression had failed, it was determined to apply the actual cautery. It was done at once; and the parts covered with lint, spread with cerate composed of two parts of resin cerate, and one of oil of turpentine; forty drops of tincture of opium were given to procure sleep. The recovery of the patient was truly remarkable. (Dr. S. T. Chadwick, p. 356.)

*From Irritation of the Nails.*—Apply a hot saturated solution of alum continuously to the parts. This induces rapid absorption of the thickened cuticle and prompt cicatrization of the ulcerated surface. (Mr. Ure, p. 354.)

Urticaria.—Where it arises from defective digestion, give a dinner pill, containing three or four grains of rhubarb, and from half to one and a half grains of ipecacuanha. This remedy is a very valuable one in slowness of digestion. (Dr. G. Budd, p. 138.)

Give quinine as follows:—Quin. disulph, gr. xij.; ammon sesquicarb, ℥j.; magnes. carbon, ℥ss.; aquæ, ℥viij.; Fiat mist. ℥ss. ter die sumend. (Mr. Startin, *Medical Times and Gazette, May* 13, 1854, *p.* 487.)

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## AFFECTIONS OF THE BONES AND JOINTS.

Amputation *by Flaps.*—If the circumference of the limb be twelve inches, for example, the anterior flap should be three inches, and the posterior six inches long; the knife having transfixed the soft parts, so as to make the anterior, or shorter flap, seven inches at its base; and the posterior, or longer flap, five inches. By this method the measured cut surfaces of the two flaps are exactly equal. (Mr. T. Wakley, p. 280.)

Ankle-Joint, *Exarticulation of.*—Pirozoff, of St. Petersburg, modifies Mr. Syme's operation at this joint. He preserves the posterior portion of the os calcis, which is thus left to fill up the heel flap. The operation is conducted in the same way as Mr. Syme's, except that, after the exarticulation of the astragalus, the os calcis is divided by the saw behind the posterior extremity of the astragalus, and the heel is thus preserved, instead of being peeled out. The saw is then applied to separate the malleoli, and a thin slice of the articular surface of the tibia. The cut surface of the tibia is then brought into apposition with the cut surface of the os calcis, and the skin flaps accurately united by sutures. *(Medical Times and Gazette, May* 6, 1854, *p.* 468.*)*

*Removal of.*—Take care to make as much use as you can of the sole of the foot for the flap. It will have to bear all the pressure afterwards, and is skin ready formed for such purpose. Preserve not only the skin but the whole of the fibrous and fatty granular structure of the sole. Keep the knife free from the posterior tibial artery, which is best done by cutting quite behind the flexor tendons, close to or even shaving the periosteum. Instead of using adhesive strips and bandages afterwards, make use of sufficient sutures, and then apply straps of linen about a foot long and an inch wide, soaked in warm water, to the stump between the sutures. Keep the parts warm generally, with warm water on lint covered with oil-silk, and keep up gentle pressure on the flap. (Mr. S. Hadwen, p. 258.)

Astragalus, *Non-Excision of.*—This is a modification of Syme's operation; but Mr. Simon believes the stump to be better than Syme's, because of its greater breadth, its mobility in the joint, and the saved inch and a half of leg. The operation is performed similar to that of amputation at the ankle-joint, the knife running between the astragalus and os calcis. The flap is taken in the same manner as in amputation at the ankle-joint. (Mr. J. Simon, p. 261.)

Cranium, *Fracture of the Base of.*—If the patient be collapsed, apply external warmth in all forms, and aid reaction by brandy or ammonia. When this has taken place clear the bowels by purgatives. If the patient has been accustomed to stumulants, and if the pulse flag, administer the stimulant he has been habituated to. After the purge has acted, give five grains each of mercury and chalk, and Dover's powder, until he is slightly mercurialized. The patient must be kept perfectly quiet; but if the pulse becomes full, hard, and incompressible, leeches must be applied to the head, or we must bleed from the arm, but with caution. If there should be irritability with fever, apply a blister to the nape of the neck, and give the acetate of ammonia as a diaphoretic. (Mr. J. Hilton, p. 226.)

Excision of Joints.—There is one important view always to be observed with respect to this operation on the knee and the elbow. In the knee-joint endeavour to promote *firm anchylosis.* In the elbow-joint endeavour to ensure *mobility.* (Dr. Keith, p. 256.)

Gangrene, *Spontaneous.*—As all these cases are deficient in power, a stimulating rather than depleting plan must be pursued. Large doses of opium will be well borne, and are very beneficial. The best local stimulation is warmth by cotton wool. (Mr. E. Stanley, p. 295.)

Hip-Joint Disease.—Professor Carnochan relies on constitutional treatment, and abandons all splints and confinement allowing the pus to escape spontaneously. (p. 234.)

Lifting Apparatus for Beds.—A description and diagrams of the ingenious contrivances for the purpose of lifting patients in hospitals, called "The Lawson Bed and Transferrer," will be found at p. 220.

Splint.—For a description and drawings of a new splint invented by Mr. C. J. Gibb, "simple in principle, and capable of adaptation to all fractures of the extremities and to any size of patient," see page 216.

Stumps.—*Rules for the Formation of.*—In the leg, amputation should be performed at the upper portion of the lower third, so that the

patient may have a complete command over the artificial limb, without the stump being too long. The leg should not be amputated above the upper third, and where one-third cannot be saved, it is better to amputate at the lower third of the thigh; so that a stump may be left of sufficient length and power. A good stump above the knee is far preferable to an indifferent one below. In the thigh the lower third is the best part. As a rule in all cases, the larger the stump the better, unless as in the case of the leg, the extreme length might interfere with the mechanical arrangements. The leg should never be amputated in children, but the lower third of the thigh always selected, because the amputated limb ceasing to grow in proportion with its fellow, the knee-joint will in time be elevated some inches above the other, imparting to the gait a peculiarly grotesque appearance. (Editor of *Lancet*, p. 280.)

Wrist-Joint, *Excision of.*—Mr. Erichsen and Mr. Fergusson have removed the bones of the wrist by lateral incisions. Mr. Simon has removed them by making two long incisions in the anterior and posterior aspects of the joint, reaching from about two inches above the wrist, back and front, to the centre of the palm and dorsum of the hand, the incisions being so managed as to run between the tendons coursing down to their destination on the metacarpal bones and fungus. (pp. 273, 276.)

Ununited Fracture.—Introduce a needle from each side of the limb into the interspace between the bones, and pass a continuous current of galvanic electricity through. In an obstinate case mentioned by Mr. Holl, of the York County Hospital, the application was continued daily for a fortnight, and a cure was the result. (p. 215.)

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## AFFECTIONS OF THE EYE AND EAR.

Ear Polypi.—For the removal of these growths Mr. Toynbee uses a kind of ringed forceps, each blade of the forceps having a ring at the extremity instead of teeth. By this the structure is not broken up, and the growth has a better chance of being removed by the roots. A drawing of the instrument will be found at page 372.

Opacity of Cornea.—Carefully pick off the opacity with a miniature gouge. The signs of the fitness of the cases are, the opacity being raised, and to all appearance being of an earthy nature and superficial. So long as the opacity is due to deposit of earthy material, we have every reason for operating. Malgaigne operates in these cases thus: he made an incision above the upper edge of an opacity which covered the lower part of the cornea and divided the external laminæ; he then fixed the edge of the opaque portion with

fine forceps, and in raising it this peeled off very easily, and the separation was completed by another incision round the lower edge. (Mr. Haynes Walton, p. 364.)

Lachrymal Sac, *Injection of.*—Mr. Obre has brought into notice an injenious invention for injecting the lachrymal sac. A small silver canula is attached to a vulcanized India-rubber bag the size of a nut. The canula being introduced into the meatus, a slight pressure on the bag propels the fluid. A drawing of this apparatus will be found at page 368.

Tarsal Tumour.—Whenever this tumour takes an outward direction, divide it on the outside, squeeze out the contents, and pull the cyst away with a pair of forceps. If the incision is made horizontally, and the edges brought accurately together, there will be no scar. (Mr. Haynes Walton, p. 367.)

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## MIDWIFERY AND THE DISEASES OF WOMEN.

Anemia.—*In Chlorotic Anemia* especially, give the saccharine carbonate of iron and manganese. This preparation is much more powerful than the simple carbonate of iron. In the *chronic anemia of children*, the extract of bullock's blood, in doses from ℈j. to ʒj., may be given with great benefit. In *infantile anemia* we may give 15 grains of this extract with three grains of the above double salt with great advantage. (Dr. S. T. Speer, *Med. Times & Gazette, Dec.* 10, 1853, p. 598.)

Cancer Uteri, *Hemorrhage from.*—To arrest bleeding from cancerous growths from the neck of the womb, give injections at five minutes' interval, of a solution of the perchloride of iron, 15 parts to 250 of water. (M. Remilly, p. 436.)

Carcinoma Uteri.—To relieve the excruciating pain, apply the vapour of chloroform to the os uteri by means of Dr. Hardy's 'anæsthetic douche'. (Dr. S. L. Hardy, p. 404.)

Galvanism *in Obstetric cases.*—A continual current is by no means so effectual as repeated shocks; these rarely fail to excite muscular contractions, for this stimulus acts directly on muscular fibre. The discs of the apparatus may be covered with thin flannel, and applied on either side of the uterus, the flannel being moistened with water. This plan is equally effectual as the application of the discs to the spine and the cerix uteri. (Dr. R. Barnes, p. 385.)

Hemorrhage, *during Labour.*—In cases of hemorrhage before the birth of the child, apply the poles of the galvanic battery to the sides of the uterus. (Dr. R. Barnes, p. 382.)

*From the Navel of new-born Children.*—The best plan is (as cauterants usually fail) to secure the three vessels of the cord, by pulling the navel knot forwards, and passing around it a ligature with the help of hare-lip pins. (M. Roger, p. 454.)

Hydatids.—For the expulsion of hydatid growths from the uterus, apply galvanism. (Dr. R. Barnes, p. 384.)

Lacteal Secretion.—The stimulating influence of galvanism is well worthy of a trial, to arouse the activity of the mammary gland. (Dr. R. Barnes, p. 385.)

Ovarian Tumours, *Excision of.*—The length of the incision should be regulated by the size and character of the tumour. The length should be such, that the solid part of the tumour should be extracted entire. The pedicle should be transfixed with a nævus needle, carrying a whip-cord ligature, and tying on each side as closely as possible. The ligatures should not be left in the peritoneal cavity, nor should the stump slough off in it, therefore the pedicle should be well drawn forward so as to project above the wound, and the ligature attached to the hare-lip pins, with which the lower line of the incision is closed. It is of the greatest consequence to ascertain before operating whether there are any adhesions which will prevent extraction. These generally occur in about one-third of the cases. We may judge whether there be or not, by ascertaining if the patient has been liable to peritonitis, and if the tumour does not change its position on a deep inspiration and expiration, and by alterations of position. If adhesions are suspected, it is better to make a small exploratory opening, and examine the connections of the tumour by the finger or hand. (Mr. J. E. Erichsen, p. 433.)

Pelvic Viscera, *Prolapsus of.*—In these cases, with lacerated perineum, the object must be to remove the actions of the sphincter ani and the levatores ani, by removing their points of attachment to the coccyx. Mr. Hilton describes his plan of operating in these cases as follows:—A narrow sharp-pointed knife was introduced through the skin on one side of the point or free extremity of the coccyx, about half or three-quarters of an inch from its end; it was then passed into the pelvis between the concave surface of the coccyx and the rectum, special care being taken not to puncture the intestine. The cutting edge of the knife was now made to sweep over the sides and ends of the coccyx, so as to separate from it the coccygeal attachments of the sphincter and levatores ani. The knife was then withdrawn through the same small opening by which it had been introduced, scarcely any blood escaped at the wound, but a compress of lint, supported by adhesive plaster, was applied over it to keep the parts quiet and to intercept the flow of blood. (Mr. J. Hilton, p. 401.)

Polypus Uteri.—Sometimes a polypus can be reached by the fingers easily, and separated from its attachments, particularly when flabby or putrid. Introduce two fingers of the left hand into the os uteri, to feel for the neck of the polypus, and gently but firmly tear it from the surface to which it is attached. It is obvious that whenever the fingers or hand can be used for such a purpose in the womb, it is always preferable to instruments. (Dr. F. H. Ramsbotham, p. 441.)

Sometimes the ligature is used, at other times excision, or torsion; occasionally biborate of soda given in large doses for several days will cause its expulsion. (Dr. Tyler Smith, Mr. Canney, Mr. Hodgson, and Dr. Copland, p. 442.)

Galvanism applied to the uterus has brought these growths into view where ergot had failed. (Dr. R. Barnes, p. 384.)

Premature Labour, *Induction of by Galvanism.*—In a case where it was necessary to induce premature labour for half an hour on the 23rd of Jan., the poles of the galvanic battery were applied on either side of the uterus. The womb became contracted. On the 24th and 26th the application was continued one hour, and on the evening of the 27th slight pains came on. On the morning of the 28th they had increased, and at 9 a.m. the child was born. Galvanism is more valuable than ergot in these cases, because if any unforeseen obstacle occur to the birth of the child, rupture of the uterus might be induced. Besides, if the case were prolonged, there is some danger, from the number of doses required, of producing ergotism in the mother. (Dr. R. Barnes, p. 380.)

*By Ergot of Rye.*—In a large number of cases the following prescription proved successful in inducing premature labour: ℞. Secale cornut. pulv. ʒiij.; aquæ ferventis ℥vj.; infunde per semihoram in vasa leviter clauso, et cola. ℞. Infusi suprâ prescripti ℥vss.; acid. sulph. dil. ʒss.; syrupi ʒij.; tinct. card. co. ʒij. Misce, sumat partem quartam 4tis horis. The doses required varied from three to thirty. (Dr. F. H. Ramsbotham, p. 396.)

Puerperal Convulsions.—Administer chloroform in ʒss. doses, and keep up its full effect according to the power of the paroxysms. This treatment was quite successful in a case related by Mr. Andrew Bolton. Morphia had been given previously, but without any good effect. (p. 412.)

Turning.—Nothing so much facilitates the turning of the child when the parts have become wedged, as the inhalation of chloroform. (Dr. Snow, p. 392.)

Uterine Catarrh and Internal Metritis.—A sound symptom to judge by in this disease, is, that lateral pressure all down to the neck of the womb gives considerable pain. Dr. E. J. Tilt recommends the application of the tincture of iodine to the inside and outside of the neck of the womb in such cases. The second application may take place ten days after the first, and then repeat it every four or five days, if necessary, for three months. The uterine mucus should be first cleared away. The best injections in such cases is ʒj. of the acetate of lead and one pint of decoction of poppy heads. As a remedy, five to ten grains of ergot of rye, given three or four times, proved as useful as any. (Dr. E. J. Tilt, pp. 416, 421.)

Uterus, *inaction of from Chloroform.*—Apply the stimulus of galvanism. (Dr. R. Barnes, p. 384.)

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## MISCELLANEA.

Chloride of Zinc.—To prevent this caustic from *running*, mix it with plaster of Paris, in proportions to suit the case in hand. (Mr. Cock, *Med. Times and Gazette, May* 13, 1854, p. 487.)

Cod-Liver Oil.—1. *When too nauseous for the patient*, give it floating on some bitter menstruum, in coffee, ginger wine, infusion of quassia, or, better still, in a solution of quinine, with a drachm of the tincture of orange peel, or give it in very hot milk, or smear the mouth well with marmalade or black currant preserve, and having thus absorbed the attention of the gustatory nerve, immediately swallow the oil. 2. *When the oil excites sickness.* Prepare the stomach by hydrocyanic acid and bismuth three times a day. Give first a little dry biscuit or bread crumb, and then float the oil on the coldest spring water, and give it immediately; give it in the recumbent posture, an hour or two before getting up or after going to bed. 3. *When the oil cannot be digested*, the following is useful: ℞. Rad. rhæi ʒiij.; rad. zingiberis ʒij.; rad. gentian. ʒiss.; sodæ carbon. ʒiij.: aquæ ℔. viij. The roots to be cut into small pieces; the infusion to be made with cold water, and to stand twelve hours. Take a wine glassful thrice a day for a week before beginning the oil, and then give it with the oil. (*Med. Times and Gazette, May* 13, 1854, p. 487.)

*Substitute for Cod-Liver Oil.*—Cocoa nut oil seems to possess the same valuable properties as cod-liver oil, and in some cases was efficacious where the latter had been useless. (Dr. T. Thompson, p. 116.)

Iodine.—The topical application of this remedy is becoming very general in London. The following is the formula : ℞. Iodinii ℥j., sp. vini rect. ℥j.; ft. solutio. It is better to keep this some time before using. It should be applied in glandular affections beyond and around the enlarged parts, so that the absorbed fluid may be carried through the gland by the lymphatic vessels. It is used topically, 1st, in *pleuritic and neuralgic stitches;* 2nd, to the throat in cases of *aphonia* or hoarseness ; 3rd, to the mucous lining of the throat itself in cases of congestion and of *enlargement of the tonsils;* 4th, around the external parts of the eye, in cases of *strumous inflammation;* 5th, in all forms of *periostitis*, whether syphilitic or strumous ; 6th, in *glandular affections* as above mentioned ; 7th, as injections into cysts and cavities of *abscesses*, provoking adhesive, but not suppurative inflammation, as in hydrocele. (*Med. T. and Gaz., April* 8, 1854, p. 347.)

Opium.—*Nausea from.*—To counteract the nausea from opium, combine with it 30 minims of dilute sulphuric acid. The nausea from hydrochlorate of morphia, is best controlled by dilute hydrochloric acid. (Dr. J. Williams, *Lancet, Nov.* 19, 1853, p. 497.)

Poisoning, *By Lead.*—Iodide of potassium in doses of 10 grains acts as a curative agent in lead poisoning, by converting the lead into a more soluble form, which can be readily taken up by the blood. It acts more rapidly in conjunction with galvanism. (Dr. J. R. Nicholson, *Lancet, Jan.* 14, 1854, p. 42.)

In a case of aggravated paralysis from lead poisoning, but in which there was absence of colic, the following prescription was completely successful : Iodide of potassium, 5 grains ; liquor of potassium ½ drachm ; peppermint water, 1½ ounces ; three times a day. As the recovery progressed, it was observed that the blue margin of the gums gradually disappeared. (Dr. R. H. Goolden, *Lancet, Dec.* 3, 1853, p. 252.)

*By Opium.*—Belladonna has been found useful in poisoning by opium. When the patient is comatose and other remedies fail, try the following : tincture of belladonna, six drachms in five and a half ounces of water. Take an ounce of this every half-hour, till the coma begins to disappear, or till the pupils dilate. In another severe case, one ounce of the tincture of belladonna was given at once, in three ounces of water ; in half-an-hour two drachms more were given. (Dr. Anderson, *Monthly Journal, April,* 1854, p. 377.)

Potassa Fusa.—To prevent this from deliquescing, mix two parts with one part of lime. Cylinders of this may be made nearly as manageable as nitrate of silver. (Dr. Bennet, *Lancet, May* 6, 1854, p. 497.)

Snake Bites.—Give 5 grains of bicarbonate of ammonia every five minutes; administer an enema of mustard and water, with two drachms of tinct. of valerian, which may be repeated if returned. Apply a mustard cataplasm over the cardiac region, and then give the following: Chloroform ℥j; spirit ℥ij; mist. camph. ℥iij. M. ft. m. ℥j every ten minutes. (Dr. Lowndes, *Monthly Journal, Feb.* 1854, p. 186.)

# PRACTICAL MEDICINE,

&c.

## DISEASES AFFECTING THE SYSTEM GENERALLY.

### Art. 1.—ON FEVER.

By Dr. William Stokes, Regius Professor of Physic in the University of Dublin.

[The peculiarities of fever, as a disease, are of a negative kind: it is a disease which has no known or constant anatomical character, because even in the most marked cases of the disease, the patient may die, and yet the most skilful pathologist can detect no lesion or anatomical change in any of the structures of the body to explain the cause. Dr. Stokes remarks]

I believe that we may go thus far and say, that when the fatal diseases of the world are considered, the malady which destroys most men is a disease in which there is no anatomical character. You all naturally ask, "If this be so, how did the French school come to commit the extraordinary error of declaring, that in every case of fever there was an anatomical character?" The reason is simply this, that they committed a great error in medical philosophy,—that of inferring the nature of a disease from the observation of its phenomena in one locality. Had Broussais and his followers studied fever in the wards of the Dublin hospitals, or had they gone abroad and examined fever in the West or the East Indies, or on the coast of Africa, we should have heard nothing of the doctrine that fever was symptomatic of this or of that local disease.

We find, moreover, *that fever is a disease of periodicity*, that it runs a certain period, varying in different epidemics and different individual cases. We find, further, that it is a disease in which a double danger affects the patient. One of these dangers is, that of death from simple depression; for so far from fever being a disease of *plus* vitality, it is a disease of *minus* vitality—a general condition, if we may so speak, of *minus* vitality, which of itself is often quite sufficient to destroy life, and the patient may die, and very often does die of debility alone. The poison of fever has thus a directly depressing influence on the system. But there is another condition,—and this is

what I wish to draw your attention to very strongly,—that, in the course of that special mode of life which we call fever, a liability exists to the production of secondary diseases. You will get a good general notion of this by considering the ordinary phenomena of a case of small-pox. The patient is taken ill; he has shivering, pain, fever, and he remains in this state for several days. And then we observe vesicles appearing on the surface, those vesicles filling with pus, afterwards drying, and then disappearing. No man will say, that the fever was symptomatic of the eruption. It is exactly the reverse; the eruption is the result of the fever. So it is in typhus. The local diseases are generated by the general. There is this difference, however, between what we term continued fever and the exanthemata: that while in the latter the local disease is almost always, but not necessarily always, accompanied by certain characters, as, for example, in variola there is a certain kind of eruption, in scarlatina—in measles a certain condition of the skin,—it is not so with respect to the secondary diseases of typhus. Now this is a most remarkable circumstance connected with continued fever, that the secondary diseases are inconstant. They are doubly inconstant, in their seat, and in their amount; and, in the same epidemic, we see the greatest possible varieties in the seat and in the amount of those secondary affections. However, between the exanthemata and typhus fever there is this point of resemblance, that the secondary affection is utterly incompetent to explain the general phenomena of the disease. So that we may say, with regard to the secondary affections in typhus fever, that they are inconstant and incompetent to explain the disease. But they are of very great importance. It may be asked, what are those secondary diseases? are they inflammation? The present condition of medical science furnishes this answer;—they are not inflammation in a vast number of cases, when you consider them in their early stage, but in many instances, after they have existed in this non-inflammatory state for a certain time, there comes on a re-active irritation, and we have then a mixed condition. This is the history of the ulcerations of the intestine. In the beginning we find tumefaction and infiltration, but without any appearance whatsoever of inflammation. It has been proved, that in a vast number of cases the disease goes no further, and there is retrocession of the swelling and of the infiltration, just as we see retrocession of the eruption of small-pox; but, in others, the parts into which this typhoid matter has been infiltrated take on a reactive inflammation, and then we have a combination of the essential disease and of the local disease, which is now inflammatory, though it was not so at first. We shall have abundant opportunities of proving this.

The treatment of fever is reducible to a simple formula. We cannot cure fever; no man has ever cured fever. Fever in this sense may be called incurable, because we don't know how to cure it. It is, however, curable by itself. If you leave it to its own course, it will often cure itself. The great object, then, is to preserve the patient's life

from the dangers which threaten him, pending the existence of this condition of fever—of this special state of life. If you can keep him alive to the fourteenth day, or the eighteenth day, or the twenty-first day, he will recover. What are the dangers that occur in these cases? One I have already pointed out to you—it is the danger of debility; the other is the danger arising from the accidental secondary affections. We cure the patient by preventing him from dying. We lead him on to that period when, by the extraordinary law of the disease, it will itself spontaneously terminate. We prevent him from dying of exhaustion, by food, by the use of stimulants, and by tonics. We save him from the danger which the local diseases may expose him to, by meeting them as early as we can discover them. And herein lies the whole secret of the treatment of fever—to preserve the patient, at the least expense to his constitution, up to the time when, by the natural law, the disease will spontaneously subside.—*Med. Times and Gazette, Jan.* 21, 1854, *p.* 55.

[Dr. Stokes observed that since the period when he gave a systematic course on the subject of fever, his views on that disease had altered. He says:]

Although we formerly held that the local alterations were secondary to the fever—that they were really symptomatic of the fever, not the fever symptomatic of them, as Broussais taught—yet we did not sufficiently recognise the fact, that in most cases the inflammatory action associated with them was itself secondary to the local lesion—that it was re-active, and, as such, had probably less pathological value than the local change which preceded it.

Again, the opinions which were then inculcated as to the influence which the local diseases had in causing a fatal result must be in at least two respects modified. I formerly was of opinion that death in fever was mainly to be attributed to the virulence or number of the local diseases. Such is not my opinion now; for, although in examining the bodies of many patients who have died by fever, we find various local alterations, yet they are often insufficient to account for death. And we have had abundant proofs that the typhus state itself may cause death, without there being any manifest local disease in any part of the system.

In another, and seemingly opposite point of view, our opinions have changed. For I think, that so far at least as the lungs are concerned, we did not sufficiently estimate the danger produced by the local disease independent even of the re-active inflammation. To this point I shall hereafter draw your attention more fully. We too exclusively considered the local affections as inflammations, though secondary to the fever; and did not sufficiently admit them as special typhous lesions or deposits, which might occur without any inflammatory action, or precede it.

To sum up, then; whatever be the changes that may have occurred

in my opinions about fever, they are rather developments of the doctrine formerly taught than its rejection, or the substitution of any essentially opposite view. In all points relating to the essentiality of fever, the influence which the law of periodicity exerts upon its phenomena, the secondary nature of its local affections, and, lastly, its contagious character, my views remain unchanged. But on those points to which I have already alluded, the alteration of our views is important as bearing on practice, inasmuch as it points more decidedly to the adoption of a treatment directed to the general more than the particular or local condition, and again to the more liberal employment of the tonic and stimulating treatment in the typhus of this country.

You will easily anticipate the general result of the views which I now attempt to teach you. They have led us to attach less importance than we did formerly to the inflammatory state in fever; that is, to the condition that indicates an antiphlogistic treatment in the ordinary sense of the word. In the use of stimulants we have become much more bold, even under a great variety of circumstances. But I must say, that with reference to the employment of wine in large quantities, we have been drawn to this mode of treatment less from any theory than from simple and accumulating experience, by which we became less and less timid in the use of stimulants. Observe here, how a truth in pathological anatomy may be foreshadowed or anticipated by observing the effect of a therapeutic agent.

[Diseases may be divided into three great classes. 1st, diseases having an anatomical character. 2nd, diseases having no anatomical character, but which are not fevers—these we class neuroses—such as mania, epilepsy, hysteria, chorea, &c. The 3rd class is fevers. We may ask, then, *how do fevers differ from neuroses?*]

Fever seems to be a special condition of life which is to exist for a certain time, and then to cease,—that is to say, it is under the law of periodicity; and, in this respect, the phenomena of fevers differ very much from those of the pure neuroses. There are other differences, too, between fevers and neuroses. It is quite true, that in a large number of fevers, death may take place without any organic change that we can demonstrate anatomically; but it is true, on the other hand, that, in a large number of cases, there is a tendency to the development of what I designate the secondary lesions of the disease. Thus, if we compare these two classes, the neuroses which are not fevers, and the fevers properly so called, we find this great difference, that among the former, as for example in hydrophobia, we do not see any tendency to the development of ulcers of the intestine; nor in epilepsy do we find any tendency to the development of bronchial diseases, nor in mania do we see a cutaneous eruption; nor in convulsions do we find any of these various organic changes produced. This tendency, then, to generate or produce local anatomical changes secondary to the fever is another remarkable distinction between this

class of affections and the pure neuroses. There is a third very remarkable distinction between them. Fevers—using the term in a general sense, embracing a great number of diseases, as the exanthemata, typhus, plague, and yellow fever—are capable of being transmitted by contact or by vicinity, and a great many of them are contagious. So that in their subjection to the law of periodicity, in their liability to generate or produce various organic changes in different parts of the system, and in their transmissibility by contagion, we have three very important distinctive characters, although we cannot reduce them to an anatomical expression. A great deal has been written on the subject of the proximate cause of fever, and theory upon theory has been promulgated on this subject. We are, however, at this moment, just as ignorant of the proximate cause of fever, as we were in the time of Cullen, or even long before him. We do not know what the proximate cause of fever is; but if we look at the entire phenomena of fevers, and inquire what views we may safely hold at present, for want of a better doctrine,—for it may be, that, in the progress of pathological science, the proximate cause of fever will be discovered; and it is quite possible, I might even say, probable,—when, I say, we deal with the expression of the actual state of our knowledge, we are justified in stating that fevers are the result of the introduction of a poison of some kind into the economy. The whole of the phenomena of poisoning by organic matters seem to point out a close analogy between fevers and those diseases in which a poison is introduced into the system. If a man who is in perfect health is exposed to the contagion of syphilis, in a short time his system becomes a laboratory for the formation of syphilitic poison, and he is capable of communicating the disease. As far as we can form a judgment in this question, we may say, that there is a very close analogy indeed between fevers and these diseases, whether they be fevers which are the result of contagion or not; and in this way we see a connecting link between fevers, which we call acute diseases, and diseases which are neither acute nor febrile. Thus, for example, we do not say that a patient who is labouring under syphilis, which he has caught by contagion, is in fever; but he is, nevertheless, under a condition, which, as far as the chemico-vital state of his body is concerned, is somewhat analogous to fever, that is to say, his system has received a poison, and having received that poison, it seems to work upon it, or the poison to work on the system, and the result is, that the system becomes a generator of the same poison that it had received. Now, let us go a little further into this subject. I might give you various other illustrations; and, indeed, I think you will find, that some unexpected analogies will arise in this matter, and that you will even perceive an analogy between two such opposite diseases,—such dissimilar diseases as typhus fever and pulmonary consumption. For there can hardly be a doubt, that, under certain circumstances, tubercular matter introduced into the system acts like contagious matter, and that it produces

a development of tubercular disease in the system thus infected. Such cases, then, may be considered as examples, if you will, of very chronic fevers, long continued fevers, and fevers which are not, apparently at least, under the influence of the law of periodicity. I am perfectly persuaded, that the more we study that class of diseases, which seems to be general rather than local, we shall find that the possibility of contagion will be more and more exhibited. I am strongly of opinion, that almost all the febrile diseases are contagious—that is the essentially febrile diseases—and I think it certain that there are other diseases, also, which we do not call fevers, that are contagious. It is hardly possible to doubt the contagiousness of cholera; and we may go still further, and extend the possibility of contagiousness even to such diseases as tubercular affections, and perhaps even further.

Now, let us examine what are termed the Exanthemata, Measles, Scarlatina, and Small-pox. These diseases are, in all essential conditions, fevers. An individual in perfect health is exposed to a certain exciting cause, and he gets a general illness, which exhibits phenomena referrible to the law of periodicity. How do these diseases differ from typhus fever? They seem to differ in this, that their local phenomena are more constant, and that they are probably more uniformly contagious. The contagion of small-pox, of scarlatina, and of measles is a recognized and established doctrine.

We know that scarlatina is generally constant in its phenomena,—that measles is constant in its phenomena,—that small-pox is constant in its phenomena, and especially in the phenomena of its secondary change,—so much so, that the secondary change is taken as a distinctive mark of the disease. These affections are probably, as I said before, more directly contagious; and this, perhaps, may arise from the circumstance, that the matter of contagion, in these cases, is more elaborated,—is perhaps more perfect; and the person who contracts the disease is very much in the same position as a person who contracts syphilis; that is to say, that an organic poison of a special kind, whose essential characters, however, are so subtle as to escape chemical investigation, has been presented to his system, and has affected him. The phenomena of continued fever are more variable; and this may arise from the want of constancy in the exciting cause. We hardly suppose a man to get small-pox unless he has been infected by another who has had small-pox. But continued fever, or typhus fever, seems capable of being produced by a great number of causes—or, if I may so speak—by a number of imperfectly-developed or imperfectly-acting causes, and these, of course, may be infinitely various. We also see this very curious difference between typhus fever and the exanthemata,—that while, among the exanthemata, the one exciting cause always produces its own peculiar disease, the exciting cause of small-pox producing small-pox, the exciting cause of scarlatina producing scarlatina, the exciting cause of measles producing measles,—this does not seem to be the case with respect to fever. For here is one of the

most important and interesting facts connected with the entire subject, that the same exciting cause—at least as far as we can see of it—is capable of producing different kinds of fever in different persons. This great fact has not been sufficiently dwelt on by the various writers on fever, on the Continent and in England, especially by that class of men whose object seems to have been to make themselves classifiers of diseases,—makers of classifications,—at which nature laughs.

Here is another of the great facts which show the impropriety of attempting to draw lines of distinction between what are termed the *typhus* fevers and the *typhoid* fevers—that the one exciting cause will in various persons produce the two diseases. Now, we see nothing of this sort in the exanthemata. What may be the reason of this it is difficult to say; and we explain it very often by expressing the fact in different words. It is supposed that it may be due to some variation in the state of *receptivity* of the body at the time. For, in the production of the effect of the poison, there are two elements; first, the nature and composition of the poison which is to act; and, next, the chemico-vital state of the body which is to be acted on. The two causes combined produce the result—fever. But if, the cause being the same, the bodies be in different states, we may expect different kinds of fevers; and this is all that we can say on the subject.—*Med. Times and Gazette, March* 11, 1854, *p.* 229.

[When fever of a typhus character is present, Dr. Stokes shows how important it is to avoid the depleting, and to apply the stimulating treatment, even although the symptoms may lead the inexperienced practitioner to suppose that true inflammation is present. This opinion he particularly dwells upon when he comes to the subject of the *local symptoms of fever.* These local symptoms of fever may be divided into several classes. 1st, neurotic or nervous affections—as when we have delirium, convulsions, coma. 2nd, when some anatomical change is produced in the brain, heart, spleen, glands of the intestines, or lungs, &c. But Dr. Stokes' most valuable remarks are when he treats of the 3rd class. He says:]

The third class of local affections in fever is a very curious and important one. The condition of the parts here is, as it were, a compound condition. The organ is supposed to have suffered infiltration of what is termed the typhoid matter; it has become swollen and enlarged. This is a condition which is capable of retrocession, without any consequent injury to the part; but in certain cases this retrocession does not take place, or it is interrupted by actual inflammation of the tissues which are thus infiltrated. Thus, we have three very important classes of local affections, which, though organic at first, are not inflammatory, but which become complicated with a secondary or re-active inflammation. There is, I believe, a fourth set of local symptoms, or of local affections, if you will, in fever, which

has not, perhaps, received sufficient attention. I think it is extremely likely, that, in certain cases, we have organs suffering from want of a natural supply of blood; and that this is extremely likely to take place as far as the nervous system, at all events, is concerned. Any of you that have turned your attention to the subject of the fatty degeneration of the heart,—so often brought before the Pathological Society of Dublin,—will recollect, that one of the most remarkable symptoms of this affection is, that the patient is liable to repeated and extraordinary attacks of nervous disease; and nervous disease shown by frequent attacks of syncope, or by apoplectic attacks continually repeated, very often without consequent paralysis, but in some cases with paralysis. This is an illustration of the development of extremely important nervous symptoms, not from fulness or congestion of the brain, but from an anemia of the brain; and it illustrates the great pathological proposition—it is one of many illustrations of it—that similar symptoms, or nearly similar symptoms, may arise from essentially opposite conditions. We know that apoplexy and paralysis frequently arise from hemorrhage into the brain; we find that they also arise from anemia of the brain. In the disease to which I so long directed the attention of the classes in this Hospital—the typhoid softening of the heart—there is a great probability, indeed, that the brain, under those circumstances, suffers from anemia; and it may be—though this is a point which has not been at all sufficiently worked out—that many of the extraordinary nervous symptoms in fever, to which we can assign no anatomical cause, really proceed from an anemic condition of the brain, the result of a temporary softening or weakening of the left ventricle; in fact, that in typhoid fever there is produced, for a certain number of days, the condition which is seen as a chronic state in the fatty degeneration of the heart. It requires very little acumen to perceive, that if the brain is liable to this fourth and curious set of local disturbances, other organs may suffer in the same way. This is a subject which at present is by no means worked out. I merely throw it out for your consideration. But we might inquire, whether the tolerance of wine in typhus is in any way to be explained by an anemic state of the brain. There are few things more curious than the power which is shown by patients in typhus, of bearing a quantity of wine or brandy without intoxication. They will often swallow many times more wine than would make them quite drunk, if they had not typhus; and wine becomes a sedative, rather than a stimulant, so far as symptoms are concerned. Does not this indicate a state of the brain the opposite, in some respects, to that of health? I do not want you to believe that all the good effect by wine is derived from its action on the weakened heart; for it may be, that the direct influence of the stimulant itself on the nervous matter may be a cause; but, whether we take in one or both modes of action, its effect indicates a condition of the circulating and nervous systems the opposite to that of inflammation, as we understand the term.

We come now to announce this very important proposition, that the condition of fever, or, if you will, the poison of fever, is capable of producing local symptoms without organic change. We can understand the poison of fever producing a general fever without any local symptoms; that is easy enough to be understood; but it requires a good deal of teaching and observation to persuade men that the poison of fever is capable of producing local symptoms without any organic change. It is quite impossible to exaggerate the importance of this proposition as a guide in the practice of medicine, for it is because this proposition has not been sufficiently accepted,—because it has not been engraved upon the minds of the medical and surgical students, that so much mischief is done in the treatment of fever. There is one grand rule, and, if you did nothing else for the whole of the session but learn it, your time would be well spent,—and it is this, that those rules of local diseases which are to be accepted as true in cases which are not typhus fever, lose their value to a great degree when the disease is typhus fever. This applies to the local symptoms in connexion with the three great cavities. You are not to apply the rules of diagnosis, drawn from the observation of diseases which are not fever, to the symptoms in fever, because fever is a special, essential state, and has its own conditions and its own rules. And this confirms the observation which I made in the introductory lecture, that the student, no matter how extensive his education may have been in surgery and in medicine outside a fever hospital, has really only learned half his business if he has not studied fever at the bedside. In consequence of ignorance of this rule, men having a case of fever, with symptoms which, they had been led to believe, in cases not fever, were indicative of local inflammation, at once proceeded to treat the case as one of local inflammation.

The patient on the 10th or 12th day of typhus fever is watchful, delirious, violent, complains of great distress in his head, and so on. Well, what does the practitioner do, who has not learned this rule? He shaves the head; he applies ice to it; puts on a dozen or two of leeches, and what is the result? The result too frequently is, that the patient dies rapidly. The symptoms in this case were not the result of inflammation of the brain; they were not the result of hyperemia of the brain. There was, perhaps, an exactly opposite state: at all events it was not such as to require depletion; the patient was suffering under general debility, and he sinks under the doctor. This is still a common case. I have seen applications of leeches to the head in an advanced stage of fever with delirium, almost as certainly fatal as a pistol-shot through the brain would be. Here let me give you the observations of Louis, illustrative of the actual value of the symptom of delirium, as an indication of inflammation of the brain in fever; and I may mention here, that as Louis' observations were drawn from the Continental typhoid fever, they must be considered as still more applicable to our disease; because, in the Continental typhoid

fever, there seems to be a greater probability that the local symptom shall be connected, or is really connected with local irritation than it is here. He took, in the first place, twelve fatal cases of typhoid fever, which did not present the symptom of delirium. In four of these cases he found redness of the brain, in six the brain was perfectly healthy, and in two there was slight softening of the brain. Now, let us take his twelve other cases, in which delirium was an extremely prominent symptom. In many of them the patients were violently delirious. In five of these cases there was redness of the brain, in five the brain was perfectly healthy, in one there was slight softening, and in one slight injection. Now, compare these two sets of results, and see how extremely similar they are. Where there was no delirium four patients presented redness of the brain; where there was delirium five presented redness of the brain. Where there was no delirium six presented the brain perfectly healthy; where there was violent delirium five presented the brain perfectly healthy. The other cases may go for nothing. This result is extremely valuable indeed, as showing how very little we can depend upon the symptoms of excitement of the brain, as an indication of organic disease when the patient is in fever.

Now, let us go to some other organ,—take the heart. "Well," you will say, "the heart need not to be taken, because in most of our cases the heart shows a depressed state, and not an irritated state." But there are many cases of fever in which the heart is violently excited, as you will have frequent occasion to see. What is the result of dissection in those cases of excited heart in fever? There are two conditions which, according to ordinarily received notions, should lead you to expect irritation or inflammation of an organ: first, that the patient has fever, and next that you have an organ in a state of great excitement. If the patient had not typhus fever, but had fever which was not typhus, and an excited organ, the chance would be, that that organ would be found in a condition of inflammation. If a man has fever which is not typhus fever, and his lungs are excited, we find bronchitis or pneumonia; if his pleura is excited, we find pleuritis, and so on. But here is a case of typhus fever, with extraordinary excitement of the organ, and when you come to dissect the parts you find the heart perfectly healthy,—not the slightest sign of disease is found; and the same observation will frequently apply to the digestive system. You will have tenderness on pressure of the abdomen, extreme thirst, nausea, and vomiting. Yet, on dissection, the mucous membrane will be found pale, and there will be no sign of disease. If a patient who had not typhus fever had a red tongue, or a dry and cracked tongue; if he had thirst, if he had vomiting and tender epigastrium, every one would say, this patient has gastritis, and, in all probability, he would have gastritis. But in fever, the state of the tongue is no sign whatsoever of gastritis; for each of you who has worked in the fever wards here must have seen that we are

totally regardless of the condition of the tongue in the administration of the most powerful stimulants; and we find that one of the best modes of removing the redness of the tongue in fever is to give hot brandy, or large quantities of wine, or such stimulants as bark and ammonia.

Again, take the eye. Delirium ferox with an injected eye is the expression of inflammation of the brain where the patient has not typhus fever. But take a case of fever, and is the injected eye a sign of cerebritis? Certainly not. It is merely to be looked upon in the same way as the tongue—it is a local affection under the dominion of the general disease. The truth is, that disease of a true inflammatory character is the rarest thing possible in fever; it is so rare, that some do not believe that it ever occurs. Apply this axiom, then, to treatment, and see what becomes of that doctrine which advocates bleeding in fever, which advocates starvation and purging in fever, which forbids the use of wine, and other stimulants. There is another very important view or argument to be referred to here, which all practical men will understand. If fever was a group of inflammations, or if it was symptomatic of any one inflammation; in other words, if it was an inflammatory disease, we ought to expect that in the larger number of patients who had gone through the process of fever, chronic diseases of organs would be developed. If a patient has acute rheumatism, we find that his heart may become engaged. He recovers from the rheumatism, and then he has a progressive organic disease of his heart. When you reflect upon the extent of fever, the great number of persons that have been at some time in their lives attacked with fever, you should at once come to the conclusion, that if those fevers were examples of groups of local inflammations, we should have a much greater quantity of organic local diseases consequent upon them: but what is the fact? The fact is, that such accidents are extremely rare. How few cases can be adduced of confirmed mania as a consequence of fever! How few cases can be adduced of paralysis, of apoplexy, or of hydrocephalus, as a consequence of fever! Surely, if in this enormous number of cases of fever with violent head symptoms, there had been inflammation of the brain, in some of them, at all events, we should have, as a consequence, progressive disorganization of the part. Again, take the thorax. How few instances are there on record of chronic progressive pneumonia after fever; how few of chronic pleuritis; how few cases of atrophy of the lung; how few cases of anatomical changes which end in progressive organic disease, which has started from an inflammatory disease that took its origin pending a fever! Go to the heart. We have two classes of heart affections in fever: one, a softening and weakening of the heart; and the other, an excitement of the heart. I don't care which of them you take. Do we find that, after a recovery from fever, in persons who have had either of those affections of the heart during the fever, there is a liability to valvular disease,—that there is a

liability to hypertrophy of the heart,—that there is an adhesion of the pericardium? Nothing of the kind results. The fact is, that those organs have never been in a state of inflammation. They have suffered pending the fever, and, the fever having left them, the parts are restored to their normal condition. This is a very important consideration, and you may extend it still further. If fever were an inflammation of the blood-vessels, it is not to besupposed but that we should have many cases of disease of the aorta in the thousands of persons who have gone through fever. Yet we find no such results. If you go to the digestive system, (and this is, perhaps, the system, of all others, which is the most liable to organic change,—at least in the Continental fevers,) take the peritoneum. How few cases do we find—or have we any case to show—of chronic peritonitis, as the result of the typhus fever? Not one that I know or ever read of; and yet the patient may have had symptoms of severe irritation of the abdomen pending his fever. In fact, all that we know of disease of the peritoneum, in connexion with fever, is simply, that, in certain cases of ulceration of the intestine, a solution of continuity of the peritoneum takes place, and the fæcal matter is effused into the cavity, and the patient dies of acute peritonitis. But that does not touch my argument. Where are the cases of chronic disease of the liver springing out of typhus fever? It has been long a portion of medical doctrine,—it has become a traditional doctrine,—and everything that is traditional in medicine is to be respected,—that fever has a depuratory effect on the system. Now, whether it has a depuratory effect or not, we shall not here inquire; but the very fact of the existence of that doctrine, which is much older than pathological anatomy, implies, at all events, a very general belief that fever does not damage organs; for, if it did damage the various organs that exhibit local symptoms in the course of the affection, we should not have the doctrine established of its having a depuratory effect. The cases of the establishment of a chronic ulcerative condition of the intestinal tube might be adduced in opposition to these views, but I do not place much weight upon them. We may divide them into two classes; in the one, diarrhœa, or some other symptom is established during the fever, which latter runs on indefinitely—here the typhoid disease of the mucous glands has been attended with re-active irritation, and this has interfered with the action of the law of periodicity—so that the fever runs on indefinitely. In the next case, the fever may be supposed to have ceased, but so much disorganization has occurred, that the ulcerative process seems to go on as it might be supposed to do in another case where no typhus had preceded it. The cases related by Dr. Cheyne, in the first and second volumes of the 'Dublin Hospital Reports,' appear to be examples of these forms of disease.—*Medical Times and Gazette, April* 8, 1854, *p.* 339.

## 2.—ON THE PROPHYLACTIC INFLUENCE OF QUININE IN FEVER.

By Dr. Alexander Bryson, R.N.

[It has long been a standing rule in the navy for the surgeon, if he deem it advisable, to allow to every one going on shore in tropical climates, a certain quantity of quinine in wine, or spirits, as the case may be. This rule has not been strictly adhered to, because in some cases it seemed to have no effect; but, says Dr. Bryson,]

Convinced that the preventive influence of bark and quinine had never been fairly tried, in drawing up a Report on the African station, in 1847, I suggested that the latter should be given, not exactly on a different plan, though with a somewhat different object in view. Up to that period, bark had been used only during the time the men were exposed on shore, or while absent in boats near swampy places, and, as I have understood, for the purpose of acting as a tonic, and thereby protecting the system against the influence of fever-exciting miasmata. Immediately after they returned on board, the bark was discontinued. This was evidently wrong; for, although we know that both bark and quinine will prevent the occurrence of aguish paroxysms, and probably prevent the evolution of remitting fever, still we do not know, nor have we any reason to believe, that they have any effect whatever in preventing the peculiar exciting cause,—or, to use the more familiar phraseology, the morbific germs of the disease,—from entering the system, or that they have any permanent neutralising power over them after they have entered it. It was therefore clear that when the influence of the bark or quinine so administered had ceased, the evolution of the fever might take place at any time within twenty days from the day the persons were last exposed on shore, or to miasmata productive of fever, though in nine cases out of ten the incubative period does not exceed fifteen, sixteen, or seventeen days. Up to the fourteenth, however, the disease may occur with as much force as on any intermediate day from the first; but after that, if developed at all, it is seldom that the fever either runs high or lasts long. With the most perfect faith in the preventive influence of quinine, and trusting to its well-known antagonism to the recurrence of periodic diseases, in the above-mentioned report I suggested that "quinine being less nauseous than bark, and therefore less likely to be refused by seamen, it should be used as a prophylactic instead of the latter, and that its use should be continued, not only while the men were exposed in unhealthy localities, but *for at least fourteen days after they returned on board*, in order that the antagonistic influence of the medicine might be kept up until the incubative period of the disease had expired. The suggestion was adopted, and the results, upon the whole, are most satisfactory.

A strong, spirituous solution of amorphous quinine was mixed with several pipes of wine, in the proportion of four grains of the salt to an

ounce of the wine; a number of cases, or boxes, was then made, capable of holding a certain number of bottles; these, on being filled with the medicated wine, one or two boxes, according to the size of the vessel, were supplied to each cruizer employed on the African station. The object in supplying the cruizers with medicated wine-chests was, that they might at all times be ready and at hand to put into boats suddenly required to proceed on detached service. Thus the quinine, —which, when carried in paper, or bottles, was not only apt to be lost or blown away, but had to be given in uncertain doses, and therefore could not be husbanded—was secured, and the wine was effectually destroyed for any other purpose. Instructions for the administration of the wine according to the above plan were placed in each box, and the medical officers were requested to note and report on its effects. The following extracts will show the estimation in which it is held by the medical officers on the African station:—

"I found bark and rum given to the men going away on duty of the greatest benefit; but, from the bulk of the bark, and the small quantity of the rum, if the men were not watched closely, they would not take the draught at all. All that could be desired is now obtained in the medicated wine."

"Eighteen men were detached in the pinnace and whaler to cruise off Banda Point and Mayamba Bay, in the months of February and March. They were absent for twenty-four days. I directed an ounce of quinine wine to be given daily to each person, and it is satisfactory to state that no sickness whatever occurred."

"Two boats' crews have been constantly on detached service, close in shore, where the effluvium, wafted from the land by the morning breeze, is very offensive, and highly pregnant with the odour of decomposing vegetable matter. The immunity from disease of those engaged in this service, I attribute chiefly to the regular use of quinine wine and bark together with protection by good awnings."

"The boats remained in the Pongas one night, and the crews—officers and men amounting to twenty-four in number,—were exposed to the sun the greater part of two days. Quinine wine was given in ounce doses for eight days afterwards, and I attribute the exemption of the greater part of the people from fever to its use."

It may be stated, that these extracts afford no proof of the preventive influence either of bark or quinine beyond the opinion expressed by the several reporters; but when taken in connexion with those which follow they appear in a different light, and form a kind of presumptive evidence which cannot well be rejected.

"During the time the boats were up the Scarcies, I gave an ounce of the solution of quinine to each man daily, and continued it for ten days afterwards; and although the rains were commencing, and the men were often wetted through, I had not a case of illness."

"The boats were frequently away cruising in the mouths of the rivers, or else blockading the coast between Delagoa Bay and Mozam-

bique. I had frequent opportunities of observing the prophylactic effect of the quinine wine. In only one instance did fever follow its use, and that was of a mild character. This contrasts strongly with the seizure of a whole boat's crew with fever in March, 1851, when no wine was administered, as it was lost in crossing the bar of the river. The men greatly prefer it to the bark."

"The gig was detached in the Boom-kittam; quinine wine, in the usual dose, was given night and morning, and continued for fourteen days after its return. A boy, (William Roberts), from dislike to the quinine, took at most but three doses. He was the only one of the boat's crew that suffered from fever, which occurred ten days after leaving the river."

"While coaling at Sierra Leone, the weather was very wet, and on their several duties both men and officers were unavoidably much exposed to the rain. An extra allowance of grog and quinine was given to each man, and continued afterwards for a day or two to such as seemed to require it. Mr. ——, however, placed no faith in its preventive influence, and would not take it, and he alone suffered an attack of fever, which proved fatal."

"A boat's crew, belonging to the Pluto, were employed for twenty-five days up the Congo. The wine was regularly supplied, but it caused one of the men to vomit, and therefore he discontinued its use; he was the first to suffer from fever. Only one other case occurred among the crew."

"During our stay in the river Lagos quinine wine was regularly offered to the men morning and evening,—all took it, I believe, except two midshipmen and two seamen belonging to the galley. These four persons subsequently each suffered a severe attack of fever." While, in the whole force, consisting of upwards of 220 men, there occurred only a few other cases of trifling importance.

"When in the river Lagos the men had more than an ounce of quinine wine morning and evening, and not a case of fever occurred, though the vessel was nine days in the river."

"Thirty-six men belonging to the Water Witch were employed at the attack on Lagos; they were in the river four or five days, and, with the exception of three, all took quinine wine while there, and for fourteen days after they left it. Of the whole number, five only were attacked with fever, namely, the three men who did not take the wine, and other two, who most imprudently exposed themselves to the sun, and bathed while much heated by violent exercise."

"On the morning of the 25th of November, seventy-seven men from this ship went up the river Lagos, to attack the town. Before starting, every officer and man were ordered to take a glass of quinine wine; and a sufficient quantity was put into the boats to repeat the same at night. All, to the best of my knowledge, took it, with the exception of Mr. D., master's assistant, who rather plumed himself on having escaped *taking a dose of physic*. This young gentleman, on the 10th

of December, just a fortnight after, was seized with a violent attack of remittent fever; and of the whole number who entered the river, he is the only one who, up to this date (the 7th of Jan.) has been attacked.—*Med. Times and Gazette, Jan.* 7, 1854, *p.* 6.

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## 3.—ON THE TREATMENT OF FEVER, AS ILLUSTRATED BY ABOUT 80 CASES IN THE ROYAL FREE HOSPITAL.

By Dr. William Brinton, Senior Physician to the Hospital.

[These cases have extended over a period of twenty months, and in this paper Dr. Brinton gives the chief points worthy of remark, and endeavours to connect the pathology with the rational and successful treatment employed. Of seventy-seven of the cases grouped as fever, forty-six were typhoid, and twenty-one typhus; of the other ten, seven were mild typhoid, and two mild typhus. Dr. Brinton then proceeds to say:]

It is hardly necessary for me to dilate upon the marked contrast of symptoms upon which this diagnosis was generally based. In most instances of but moderately severe fever it is scarcely too much to say that the distinction between typhus and typhoid is ultimately as evident as that between measles and scarlatina. Two symptoms alone would often suffice to distinguish them from each other—the character of the rash on the skin, and the presence or absence of the signs of ulceration in the bowels. Thus in typhoid, the eruption appears late, has a rose colour, is thinly scattered, and fading in one place, gradually gives way to a new and equally sparing crop elsewhere: and ulceration of the solitary and agnimate follicles is invariably present. While in typhus, the rash is a single, thick eruption, of a darker colour, coming out at the beginning of the second week, and gradually fading, without any replacement by a fresh crop.

It is impossible to avoid seeing that such a contrast is a very strong argument for the real distinctness of the two diseases. To say nothing of this vast difference in the eruption, let any one figure to himself two maladies, which, though attended by constitutional symptoms common to themselves and to various other complaints, differed in the fact, that a particular set of cutaneous glands in a specific region—such as the convolute glands of the axilla—did and did not suppurate and ulcerate in the two respectively. Or let him imagine two kinds of plague, one with, and one without, axillary buboes. Surely he would call these two distinct diseases. And yet neither of these imaginary contrasts would be one whit more remarkable than that which really exists in the typhoid and typhus fevers. Nor does morbid anatomy ever sustain a more direct or faithful relation to pathology than where, as in this instance, it reveals a characteristic lesion, the mere sight of which would generally cause it to elude a superficial inspection.

But although these two symptoms often decide the nature of any particular case, still they are frequently insufficient to establish what may be called an useful diagnosis—I mean such an early diagnosis as is almost necessary to the proper treatment of these diseases. Here, as elsewhere, though a slight symptom, or hasty glance at a case, will often betray its nature to a practised observer—just as in out-patient practice the twitch of a nostril sometimes puts us on the track of thoracic mischief, or the aspect of the skin warns us to expect renal disease—still a satisfactory diagnosis demands the condensation into one focus of all the light that various circumstances can throw upon it. The rash alone often fails us: and before the end of the first week, is absent from even the typhus fever. And a great many of the milder cases of both forms, especially of such as occur in young and well-nourished subjects (where the fever often seems to be eliminated by critical sweats,) never exhibit any rash at all. Again, in many of these patients the typhoid eruption is represented by one or two scattered spots, which few but those very familiar with the disease would like to accept as its pathognomonic marks. In similar subjects the rash of typhus is often equally indistinct, appearing as an indistinct mottling, that can only be seen in a good light, or in some particular position of the surface it occupies. But even in the absence of all distinct eruption, the hue of the skin will often distinguish the case. For before the appearance of the rubeoloid spots, the skin of the typhus patient sometimes exhibits an amount of dusky redness and turgor, which can scarcely be mistaken for the limited, feverous flush on the face of the typhoid patient,—contrasted, as the latter generally is, by a peculiarly white and velvety character of the skin covering the surface of the body between the scattered rose-coloured spots.

The evidence afforded by the state of the bowels is equally late and uncertain, not to say unsatisfactory. For though, as regards the earlier stages of typhus and typhoid, it may be laid down that constipation is certainly the rule in the former disease, and the exception in the latter; yet, on the other hand, not only does this law often fail to apply, but there are many cases of typhoid where purging is absent throughout; and, conversely, of typhus where violent diarrhœa is added to the abdominal symptoms of tympanites and pain so common in very severe cases. Thus, out of the nineteen cases of typhus alluded to, three were fatal, and each of these had been preceded by diarrhœa of considerable severity. But in all three the intestines were both predicted and found to be free from any structural lesion. It seems not improbable that such diarrhœa is essentially nervous, being an indirect result of the cerebral disturbance which had caused death. While upon this topic I may mention that several examinations of typhoid subjects lead me to think that excessive frequency of the purging in this disease is connected with an extension of ulceration to the solitary follicles of the large intestine, rather than to its spread in the ileum itself;—a fact that confirms the truth of a valuable remark

which we owe to Dr. Baly, as to the prominent share taken by the first of these parts of the alimentary canal in severe diarrhœa generally.

Dismissing a variety of minor aids to diagnosis which but rarely come into use, such as the mere length of the attack, the peculiar odour of the sweat and other secretions, I may allude to one which would almost have enabled me to name every one of the entire group of seventy-seven cases. This is the remarkable manner in which the physiognomy of the two diseases is, as it were intensified, when seen in a number of cases that affect the epidemic form. Thus, during the earlier part of the period I have mentioned, almost all the cases were typhoid; while, latterly, I have scarce treated any but typhus. In both these groups the slighter diagnostic marks of colour and appearance became so evident when compared in several instances lying side by side, that many of the cases in which the rash was but ill-marked could be identified at once; while even where it was quite absent there was little difficulty in coming to a probable conjecture. And happily most of the cases where diagnosis is thus doubtful, only require a very uniform and simple treatment.

Before passing on to describe the remedies pursued, I may briefly diverge to two points connected with the pathology of fever. The first is, the date from which we ought to fix the access of the disease, a circumstance of some importance in estimating the length of the attack. Thus it is quite useless to accept the statements of the patients themselves, who, if of the poorer classes, will sometimes continue at work long after the appearance of even the graver symptoms, and if among the affluent, are often "laid up" by those premonitory to the disorder itself. It is evident we want some more trustworthy symptom than one which is often regulated by the mere necessity or power of endurance—a symptom which shall be at once of marked character, and not too long duration. Such a symptom is afforded by the first onset of shivering and pain in the back. It is so characteristic, that there are very few patients who do not both notice it at the time, and remember it afterwards; and as it rarely lasts more than two or three days, it affords a date the average errors of which are scarcely more than twenty-four hours either way.

The next point is one which concerns the question as to whether typhoid and typhus are varieties of one fever or two specific diseases. Distinct as they are in most of their characters,—such as duration, symptoms, anatomy, and geographical distribution,—it is probable that many still doubt whether they are not essentially one and the same malady. The doubt ought I think to be small, although at present we are perhaps bound to remember it. It is obvious that a decision will rest mainly upon the answer given to two questions. (First.) Does each of these propagate itself, and never the other? (Secondly.) Does the imperfect protection which each appears to afford its subject against a future attack, only apply to itself, or does

it extend to the other disease? To the first question we can hardly expect a very satisfactory affirmative, so numerous are the channels of contagion which remain open to the most secluded individuals. But as regards the second, if, in deference to many of the best authorities, we assume this protection, it would probably not be difficult to get better information. The kind of information wanted, I may illustrate by the statement of a man whom I treated for unmistakable typhoid, and who assured me that he had had a fever which his surgeon called typhus about six months before. More trustworthy instances of this kind would be very valuable.—*Lancet, Dec.* 17, 1853, *p.* 568.

[Where Dr. Brinton sees the patient in the early stage he follows the old plan, first giving an emetic. He says:]

The following were the reasons which induced me to do so. Whatever view we may take of the nature of the fever poison, and of the mode in which it reproduces itself in the fluids or solids of the organism it attacks, we have good grounds for conjecturing that it is really removed and eliminated from the system by the various secretions and exhalations of the body;—which latter thus contribute (at least indirectly, and perhaps directly) to the arrest of the disease. Now it seems to me that we can scarcely accept this view without admitting another proposition as a corollary to it—namely, that when the chief stress of the symptoms falls on any particular glandular surface, causing the increased flow of a more or less perfect secretion from it, this action represents a determination of the poison thither, and an effort of nature towards its elimination thence. And hence, where the secreting surface is one not easily disorganized, and amenable to the influence of drugs, it is important to try whether stimulating it to increased action will not help to eliminate the poison, and thus to mitigate the disease. Indeed as respects the skin, some such view as this appears to be commonly entertained and acted upon, both in this and other disorders, where a spontaneous local determination is often aided and increased by diaphoretics, to the great benefit of the patient. And it is probable that we may extend this view to the stomach. For the vomiting of all the exanthemata is so specific in its date and characters, as evidently to have some direct connexion with the disease—a connexion not unlikely to be that of elimination just mentioned. And as regards the action of emetics, I may add that I have been able to establish a point of great interest and importance, explanatory of their value, not only in this, but in other disorders. On injecting a solution of tartar-emetic into the veins of a dog, this mineral was shortly afterwards found occupying the fluid contents of the animal's stomach, in a state of concentration far exceeding that in which it must have been mixed with the mass of the blood. So that it would appear, that whatever the share taken by the stomach itself in the vomiting, this act will at least fulfil the object of removing the drug from the system. And presuming that during the

early stage of fever the poison of this disease also selects the gastric mucous membrane as its especial channel of outlet, we may easily imagine how the administration of an energetic vomit like tartar-emetic or ipecacuan can aid the exit of the poison, and thus mitigate the worst symptoms of the disease.

But of course, whatever may be the correct theory of the action of emetics, their remedial value in fever can only be determined by experience. And without collecting the evidence on this head which is doubtless scattered in the works of various medical authors, both ancient and modern, I may state that in many of these cases I had reason to believe them of great value. They frequently afforded almost immediate relief to the distressing headache and depression which had marked the access of the disease; and were followed by a fever of unusually light character. It is true that I can scarcely say that one or two of these cases might not have gone on as favourably even had no emetics been given. But some of them appeared to be very heavy attacks of an unusually grave epidemic. And in one instance of this kind their efficacy could scarcely be questioned. A girl of 17 was brought into the hospital, suffering under premonitory symptoms of great severity and of several days' duration: the rigors were just commencing; the pain in the head was violent, the skin dry and burning, the pulse 130 per minute, and the whole aspect such as generally ushers in the worst cases of fever. She was one of a family of five, four of whom had typhoid—three severely, and one fatally. The administration of an emetic was soon followed by vomiting, and so much relief was then experienced, that on a subsequent return of the severe symptoms, I was induced to repeat it. After a third emetic, the relief was comparatively permanent, so that she remained without a single dangerous symptom for about ten days, when the diarrhœa of of the intestinal ulceration set in. During this period I treated her like other mild cases uncomplicated with cerebral disturbance—namely, with gentle diaphoretics, such as small doses of Dover's powder nightly, and acetate of ammonia. The diarrhœa threatening to become excessive, was controlled by enemata; and a little bronchitis then required attention. Towards the beginning of the fourth week, she was able to begin taking the decoction of bark; in another week this was exchanged for quina and iron; and finally, at the end of the fifth week, she was discharged quite cured. And in one or two cases where the same plan was adopted at an equally early date, the symptoms were altogether cut short; and were followed by a convalescence so rapid that I was inclined to doubt the accuracy of my previous diagnosis, and regard them as instances of *febricula;* although not only had they had all the aspects of the prevailing epidemic, but one of them had occurred in a hospital nurse, under circumstances which led me to believe that she had contracted the disease by contagion in the discharge of her duties.

The emetic I have given has usually been the wine of ipecacuan in

doses of one fluid ounce;—this drug being more safe and manageable than tartar-emetic, and the wine being less liable to adulteration than the powder, as well as in a better form for rapid and efficient absorption. As regards the date of the disorder at which the emetics ought to be administered, their efficacy seems to have an intimate relation with the prevalence of the nausea which characterises the onset of the disease. After this symptom has once subsided, as it generally does about the middle of the first week, they seem to be of very little use; on the contrary, they occasionally mystify the physician, by causing a purging which, in the case of typhoid, may at least obscure the symptomatic diarrhœa, if not provoke its occurrence.

In considering the treatment of fever during its later stages, I need scarcely offer any apology for connecting it with a few observations on the dates and causes of death. Whatever the difference in the maximum mortality of typhoid and typhus, we should scarcely do wrong to regard the danger in both diseases as rising steadily up to the end of the second week. Soon after this date the fatality of typhus seems to reach its maximum; while that of typhoid, which has hitherto been somewhat less than its kindred disease, goes on increasing for at least a week or longer. The declining mortality which succeeds the maximum of each is contributed to by a variety of what may almost be called accidents of the disorder—such as hemorrhage, abscesses, erysipelas, and the like. But what are the specific causes of this graduated mortality?—And how are they related to these dates? To answer these questions in any satisfactory manner would imply the solution of a still more difficult problem—namely, the nature of fever itself.

It would lead me too far from the objects of this paper to enter on the discussion of so large a question as the latter of these three. As regards the two former, I would offer the following statement as the answer which appears to be most consonant with experience, and most useful in practice:—

1. In a certain class of cases, happily of rare occurrence, the patient falls a victim to the disorder at its very outset. Prostrate and collapsed, without very intense febrile symptoms, he seems to die from the mere shock of its attack. In these instances we are justified in conjecturing that the patient succumbs to the action of the poison which circulates in his blood. They are the analogues of the similar but more frequent deaths seen in the beginning of scarlatina, yellow fever, smallpox, and other acute febrile disorders.

2. The mortality from the preceding cause soon merges into another of far more frequent occurrence, the date of which may be fixed as ranging from the close of the first to that of the second week. The cases fatal at this period are almost always characterized by intense febrile action. The immediate cause of death is generally in the nervous system, and especially in the brain, which either suffers primarily, as in phrenitis, coma, or delirium, or gives way in consequence of the

disease having implicated some other organ, the functions of which are essential to proper cerebral action, as in pneumonia.

3. In a third class of cases, with less intense febrile action, the nervous centre is more gradually attacked, the cerebral symptoms appearing about the end of the second week. The nature of these symptoms varies extremely; but they generally commence by delirium, and, where fatal, end in coma. The access of genuine phrenitis at this period is infrequent.

4. In typhoid fever a fourth class of deaths may be distinguished; with a range of mortality which extends through the third, fourth, and fifth weeks. The appearances are those of increasing asthenia, accompanied by the results of the specific intestinal lesion.

Frequent as are the instances in which this somewhat arbitrary mode of division fails to apply, it appears to me not only to comprehend the chief features of a majority of cases, but also, what is more important, to supply something like a clue to their treatment. Of some of the worst cases of the first and second class it is scarce too much to say that they are necessarily fatal, whatever be the means adopted, just as are certain instances of cholera or scarlatina. But, from what I have seen of the action of emetics, I think some of these apparently hopeless cases might be at least improved by their early use. As regards the second class, I can add nothing to the eclectic plan of treatment, or to the list of remedies already made use of in this country. But it is in the third and fourth class that I have found the effects of treatment most marked. Great as is the mortality at these periods, the cases to which I am alluding go far to show that, in a patient who has not been weakened by undue depletion in the earlier stages, we ought never to despair of recovery.

In the cases of the third class, the indications are two: to mitigate the cerebral symptoms, and to support the strength of the patient.

In respect of the first, I need scarcely recapitulate the various remedies usually employed. In violent delirium, unaccompanied by high fever, opium and cold affusion to the shaven head seem most useful. Where the febrile symptoms are intense, or the delirium threatens to merge into coma, I have adopted the late Dr. Graves's plan of guarding the opium with tartar-emetic, or, what is perhaps better, ipecacuan, with the greatest advantage. And the access of coma has generally been treated by large and frequent blisters to the scalp.

As regards the second indication, it is one of the chief objects of this paper to record the successful results of my careful and deliberate trial of a system of stimulation which was proposed some years ago by my friend and former colleague, Dr. Todd. This consists in the frequent exhibition of very small quantities of brandy diluted with water, alternately with beef-tea and other fluid food. The *rationale* of this plan I presume to be that ordinary port wine is a mixed fluid of uncertain strength, which requires digestion, and has the additional disadvantage of sometimes acting on the bowels; while brandy is

taken up at once by the veins of the alimentary canal. The smallness and frequency of the dose in which the stimulus is administered are equally important; for it makes every difference to the patient whether his exhausted system is sustained by minute doses of alcohol every hour or half-hour, or partially intoxicated three or four times in the day. In the latter case the reaction between each of the separate doses sometimes places him in a far worse position than if no stimulus whatever had been given.

But whatever may be thought of this explanation of the above plan, —for which it ought to be stated that I alone am responsible,—few who had seen the cases under my care in the Royal Free Hospital could have doubted its efficacy. And one point of great importance respecting it is the fact that, at this stage of the disorder, severe febrile symptoms do *not* contra-indicate its use. Repeatedly have I seen all the appearances of fever clear off as though by magic under a quantity of stimulus, (sometimes amounting to twenty-four ounces of brandy daily), which might well alarm any one who had not had practical experience of its effects. Whether its efficacy might not be reduced to some more exact and physiological statement than that of "supporting the strength," I hardly dare inquire, lest it should lead me to a topic which, though interesting, would be irrelevant here,—the relation of fever to combustion and animal heat. This much, however, may be pointed out, that alcohol is comparatively a very pure carbonaceous diet, and an agent which appears to check the process of waste in all tissues.

The additional treatment adopted with reference to the fourth class of cases may be described as chiefly directed to the intestinal symptoms characteristic of typhoid. Here again I have to own that one of the chief features of my treatment has been derived from my former teacher, Dr. Todd, who has long laid great stress on the use of turpentine in these cases. The distressing pain and tympanitis is generally much relieved by stupes, consisting of turpentine sprinkled on a hot wet flannel, and applied to the region of the cæcum. One great advantage possessed by these applications over blisters consists in the frequency with which they may be repeated. The same drug may also be administered by the mouth and rectum. But of the two the enema appears to be more efficacious than the mixture. And even apart from this fact, since the majority of these cases also require the very frequent administration of brandy and beef-tea, it is preferable in all but extreme cases to leave the stomach free for the latter, by giving the enema only. To both enema and mixture I have generally added full doses of the vegetable astringents with great advantage. And it is scarcely necessary to allude to the value of opium, which, unless especially contra-indicated by the cerebral symptoms, should generally be an ingredient of the glyster. The following prescriptions are those which figure most frequently in my notes:—Spirits of turpentine, five minims; tincture of catechu, half a drachm; mix, and

afterwards add one ounce of infusion of krameria; make into a draught; to be taken every fourth hour. Spirits of turpentine, thirty minims; tincture of catechu, two drachms; tincture of opium, fifteen minims; mix; to be added to two ounces of decoction of starch, for an enema.

The small bulk of this enema gives it a better chance of being retained, which it very often is. Its efficacy in controlling the diarrhœa is remarkable;—so much so, that while the febrile symptoms continue very prominent, I have generally suspended its use as soon as it has reduced the evacuations to three or four per day, having reason to doubt the propriety of checking them where they do not threaten any serious drain to the system.

The efficacy of the treatment just sketched out may be best imagined from an example like the following:—

M. W—, aged 42, was admitted into the hospital, Feb. 14th, 1853, at about the tenth day of typhoid fever. When brought in she might almost have been termed moribund. Her skin was of a brick-red hue, and of a pungent, dry, but not excessive heat. Her pulse of about 130 per minute, was feeble, fluttering, and at times scarcely perceptible. She lay supine and unconscious; breathed stertorously; was blind and deaf; in short, the only relics of the animal functions were evinced by her still executing the movements of swallowing, and moaning when her tympanitic belly was pressed in the region of the cæcum. Her urine and fluid fæces were passed involuntarily, the latter at very frequent intervals. The integuments over the sacrum had sloughed.

She was ordered half an ounce of brandy with one ounce of water, every hour, and beef-tea as frequently in the alternate half hours. A turpentine stupe was applied to the belly, and the above enema administered. The two latter remedies were repeated in the course of two or three hours. The distressing state of the bladder and nates was also attended to. But I did *not* apply blisters, as perhaps I ought to have done; for not only did the state of the pulse and bowels render me less desirous of doing so, but, to say the truth, I had grave doubts whether the patient would live till a blister rose, and was also very anxious to concentrate the nurse's whole attention on the sedulous repetition of the stimulants and enemata.

On my next visit the patient was still living, but without any apparent amendment. Finding that she had swallowed better than I expected, the quantity of brandy was raised to eighteen ounces, and, after a few hours, to twenty-four ounces per day, to be divided into rather larger and more frequent doses than before.

The next day the stools were no longer passed involuntarily; and the pulse was decidedly improved in both force and rhythm, though nearly as frequent as before. She was sensible of the noise made by shouting loudly in her ear, but seemed not to be capable of appreciating the words used. Her skin was rather paler, and much less pungent to the feel.

From this time she gradually amended in every respect. The diarrhœa soon diminished in frequency, but continued for a fortnight to claim the most constant and watchful attention. But long before this the patient had recovered her senses, her eye had brightened, her skin had cooled down, her pulse had dropped, her tongue had peeled, she had perspired, and was, in fact, convalescent. Her recovery was, however, very much retarded by the presence in her bladder of a quantity of rough precipitated phosphates, which had doubtless accumulated there during the distention and paralysis of this organ, that had preceded her admission. Very little alleviated by treatment, the intense pain and partial hectic produced by this mortar-like mass were terminated by its gradual discharge piecemeal through the urethra, and she left the hospital cured.

Another case which may well illustrate the good results of the same plan is that of a woman who had been subjected to an operation for the relief of an ulcerated leg by my colleague, Mr. Gay. She was attacked with typhoid fever, and transferred to my care. The fever was very severe, and all healing action in the leg was already suspended, when another grave disorder supervened, in the shape of erysipelas of the limb. This spread upwards from the ulcer of the leg, and terminated in abscesses of the thigh and groin. In spite of all these serious complications, she made a very fair recovery, so as to be discharged from the hospital cured of all her complaints, and with a leg which did great credit to Mr. Gay's new operation, its large ulcer of many years' standing being covered by a firm cicatrix. I believe my esteemed colleague once or twice felt rather nervous on seeing the large quantity of brandy our patient was taking daily; and, to say nothing of the stimulus and support she received, I am persuaded that, unless the characteristic diarrhœa had been instantly controlled, this case must have been lost.—*Lancet, Dec.* 24, 1854, *p.* 599.

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## 4.—ON TROPICAL FEVER AND DYSENTERY.

By E. Hare, Esq., Surgeon, 1st Bengal Fusiliers.

[This is the record of the results of an experiment ordered by Government in the General Hospital, Calcutta, and Garrison Hospital, Fort William, in the years 1849—50. Before the year 1638, the treatment of tropical fever was a complete failure. In that year a new remedy made its appearance which was destined to remove the stigma so long resting on the treatment of this disease.]

The mode of administering bark in those days is well described by Lind, Hunter, and Clarke. Dr. Hunter, speaking of bark and remittent fever, says, "No disease requires more speedy assistance; for the efficacy of the medicine employed depends in a great measure on its being given early. The disease gains strength by repeated attacks,

and is fatal or materially injures the constitution. To wait for any crisis would be time irrecoverably lost. After a purgative,—it is of no great consequence what kind of purgative be given,—a little Epsom salts, jalap, or rhubarb will do. After a few stools have been procured, to make it sit easy on the stomach, commence immediately to give bark; clearing out the bowels quiets vomiting, and moreover causes a quicker absorption of the bark into the system."

He commenced with a drachm dose every two hours, and his great anxiety was to give as much bark to his patient as possible without causing vomiting. "The dose," he says, "may be increased to two drachms every hour, but few stomachs will bear as much."

Forty-eight tea-spoonfuls of bitter sawdust daily, in a stomach sickened with fever, without doubt few could bear. If Dr. Hunter had had quinine, what vomiting he might have saved his patients. He did, however, his best to make the bark "sit easy." He tried infusions, decoctions, and mixtures with milk, coffee, wine, &c., all of bark, for bark must be given in some shape.

His ingenuity was taxed to the utmost to get bark down, and keep it there, and when he could not, he says he always lost his patient. if the bark purged, he tried to stop it that road too by giving laudanum. Dr. Lind, when the stomach positively would not receive more bark, injected it up the rectum, and cured bad cases in that way. Children who could not swallow much of the bitter wood, he always treated by clysters of bark, and actually dipped them in baths made of the bark, and applied large poultices of it to the stomach; so determined was he to saturate his patients with the antidote by any means, and all means.

[To the value of bark, Lind, Clarke, Hunter, Balfour, Bruce, and many others for nearly 150 years gave their united testimony. The statement was—Bark is the antidote to tropical fevers; he that gives most and soonest, will save most patients! A new authority then appeared. Dr. James Johnson now arrives—another revolution took place. The conclusion he came to was, that Bark, the proved antidote, was to be discarded, and the fevers treated solely as if they were inflammatory diseases, by large depletion and salivation. This system was pursued until 1833.]

In the year 1845 appeared our last authority for East Indian fevers, viz.,—Johnson and Martin on 'Tropical Diseases.' This contained a new edition of Dr. James Johnson's work, reiterating his continued confidence in his former opinions, after, he says, fifty years' experience; and the book was rendered especially authoritative to us in Bengal, from its having also the sanction of the name of Dr. Martin, who was long in extensive practice in Calcutta. Dr. Martin writes thus—"Early and copious bleeding at the very onset, is very generally necessary in the severer forms of Bengal remittent fever; then full doses of calomel, with sudorifics, short of producing salivation, with saline

purgatives in the intervals. If the disease does not now yield, but on the contrary, if the secretions become watery or suppressed, and the paroxysms recur at shorter intervals, or with increased severity, leaving but imperfect remissions, then there is imminent danger—and inflammation or acute congestion, in some important abdominal or other organ, may be more than suspected. For this, in addition to abdominal bleeding, mercury, in small repeated doses, with antimonials, must be given mildly, to affect the system. It is the only known means of saving the patient, by anticipating the destruction of some organ essential to life. It here becomes—in the apt words of Dr. Jackson—a remedy of necessity. Where the remissions, on the other hand, are well marked, quinine in full doses (gr. iij. to gr. v., three or four times a day) should be given without waiting for *every* thing. Some practitioners recommend that, before this drug is used, we obtain previously a clean tongue, natural secretions, and the absence of all heat of skin or local affection. I believe this to be a very dangerous practice. If we are to wait for everything, we shall often wait too long, or till it is too late. I have always administered quinine in the more favourable cases now stated, in disregard of certain abdominal complications (those of the head should generally exclude it), believing that if I arrest the paroxysm, I do greatly more towards the cure at large than quinine can possibly do of harm to the local affection, the treatment of which, by local depletion and counter-irritants, is not interfered with by this means. Again, all tenderness on pressure or local affection does not, in the case here stated, necessarily constitute inflammation."

My experiment in Calcutta was to prove, that "mercury" is not the only known remedy, or a remedy of necessity, when the remissions are imperfect, and there is acute congestion of some important abdominal or other organ, but that quinine ought to be given in such cases in enormous doses of from ℥i. to ℥ii. daily; and the more acute the symptoms, and the less the remissions, the larger and earlier are the doses of it required. That head symptoms should not generally exclude quinine, but demand its fullest and largest quantity, and the earlier the better; that it is most fatal waste of time "to wait till the remissions, on the other hand, are well marked" before quinine is given; and that so far from not waiting for "*every* thing," we ought to wait for *nothing*, but if the fever be undoubtedly malarious, and with bad symptoms, proceed at once to saturate the patient with the antidote; and that a grain even of calomel is in no case required. By following this system, in a public experiment of twelve months' duration, in the General Hospital at Calcutta, my mortality by fever proved to be one-twelfth only of the average mortality there for the last twenty years.

[Dr. Johnson's verdict would not have been able to supplant the use of bark had it not been that in the worst cases, the already sickened stomach was not able to digest, or bear the large mass of woody

fibre, &c., given in the bulky powder of the drug. Mr. Hare on this point says:]

Well assured as I am now of the certainty of cure from quinine, I doubt much if I would trust a bad case of fever to bark alone. It must cause inconceivable distress and vomiting to the patient, without the slightest benefit, for it cannot be retained. I can therefore readily imagine the delight with which the elegant and tasteless medicine, calomel, was resorted to, with depletion, which coincided so well with the theory of the day. And the result, I know from my own experience, must have been successful, quite as much so, perhaps, as the treatment by bark in its crude state. There cannot be a doubt, that if not calomel, yet certainly salivation is an antidote to malarious fever. The instant a patient's mouth is sore the fever leaves him. The mercury produces not the slightest effect till then, but from that moment the disease vanishes, as if charmed. The change is from death to life, from extremity of suffering to calm and comfort.

We all in India have had multiplied experience of this, but one should read Dr. Johnson's own case of malarious fever with dysentery. "As my night closed in, the exacerbation was great, and I was again delirious. On the third day my fever ran higher, with hot dry skin; and as night approached my apprehension of the usual exacerbation brought on extreme mental agitation. The surgeon endeavoured to cheer me with the hope of ptyalism, which he assured me would alleviate my sufferings [all this time he was taking calomel in scruple doses.] As the night advanced my symptoms became aggravated, and I was convinced a fatal termination must ensue. Suddenly at four o'clock of this same night salivation appeared, succeeded with such agreeable sensations, that I ejaculated aloud my heartfelt gratitude to heaven for my deliverance." Numerous instances, too, of the safety which salivation gives from the effects of the malarious poison, may be found in Dr. Johnson's book, viz., patients salivated for syphilis sleeping with impunity in places which were fatal to every one of their companions; and also many cases are on record of officers in India passing in a state of salivation by Dâk, unharmed through the most deadly jungles.

Dr. Johnson's new system was therefore offered to the world with proofs of its efficacy not often attained in medicine. He had in fact, without knowing it, discovered a new antidote to malarious diseases, and which, though used on wrong inflammatory theories, must have been nevertheless decidedly successful.

But since the discovery of the invaluable quinine, we have wanted a bold return to the practice of our fathers; for in quinine we have all the qualities required. It is not a bulky medicine, and does not cause vomiting. It is a perfect antidote, and will cure all cases of malarious fever not otherwise hopeless, and it has no bad effect like mercury on the constitution. The gradual introduction of quinine in place of calomel has left our mortality by fever much the same as in

former days; but by the expectant treatment for malarious dysentery, where quinine has not been substituted for salivation, the statistics of the General Hospital for twenty-five years shew that the mortality is actually double now what it was under the salivating treatment, viz., from 1826–1833 there was only one death in six admissions, whereas from 1846–1850 there was one death in every three admissions.

Now it would seem *a priori* probable that such cases of congestion as Dr. Johnson describes, and which are very common, viz., "the liver so gorged with blood, that it seemed broken down in its interior structure;" it would seem probable, that in some such cases less severe, an effort for repair might commence in some instances, and effusion of lymph be found after death, or pus, the result of inflammation following the injury of the textures. Yet, nevertheless, only three such cases are described in the records of the General Hospital, by a large number of observers, from 1820 through the long period of thirty years: and who have always been the best men of our service. The conclusion, therefore, may safely be relied on, that malarious fever is very rarely indeed accompanied with inflammation of any internal organ, and that, dropping all theory of the cause of the disease, we find, from inspection, that it destroys life, simply by an accumulation of blood in the veins of the brain and all the abdominal viscera. Now, quinine has the power of stopping these accumulations, and though we may occasionally relieve the present tension of the viscera by local or general bloodletting, yet the congestions will again occur, and eventually destroy life, except we administer their antidote as early and in as large doses as possible; and the experience of those who used bark, and my own experience in the General Hospital, show not only the safety, but the immense advantage of this treatment. I am myself convinced that malarious fever is caused by a blood poison of a most depressing kind, and destructive of all vital action, and that the excitement which we see in these fevers is far from the stimulus of the poison, but is the last effort of the vital power, not quite overcome, struggling to relieve itself from the Lethean influence. The most dangerous form of this fever is not when this struggle is strong, which is a most favourable symptom, but when vitality is so depressed that no distinct reaction takes place, the skin changing from hot to cold twenty times and more in the day, with partial sweats here and there in parts only of the body, or where, as in the algid fever described by Dr. Haspel, in Africa, "the skin is icy to the touch; a subtle poison appears to be preying upon the vitality of the economy, the patient resembling a breathing corpse; the tongue and breath are icy, the voice extinct," and, as he adds in the next page, "the surface generally blue," from the accumulation of the whole blood of the body in the veins. I have seen very many of these cases, and anxiously watched over them while I administered enormous doses of quinine in solution. I have had patients lie in this state more than forty-eight hours, and the

first symptom of recovery was violent reaction, which I hailed with delight ; for then a little cold water to the head, and the continuance of quinine, rapidly restored the patient to health. I am convinced by such cases that we are wrong in considering quinine merely as an antiperiodic.

These were the arguments which, after careful trial for three and a half years, I published in a small pamphlet, together with a treatise on Dysentery at Delhi, in November 1846. It excited attention, and numerous successful cases by others were published in our Indian periodical, then edited by Dr. Edlin. But notwithstanding its favourable reception, and, so far as its treatment had been tried, successful result, the seniors of our service especially, and many of my friends who had been greatly persuaded of its safety, yet confessed freely their fear of giving quinine in fever, when the head was affected. They said, and justly, that the treatment by calomel for these cases had been always considered by every one so imperative, and the action of quinine on the brain so like a stimulant, that they were afraid to risk the lives of their patients by giving them quinine in the large doses required, till it had first been extensively tried. At last the discussion on this, and my plans for dysentery, were so prominently brought to the notice of the Medical Board, that they wrote to the Govenor-General, urging a full trial of them at the General Hospital. The Punjaub war broke out, and all was in confusion ; but when it ceased, the Board applied again to Lord Dalhousie, who immediately assented, and arranged himself the general plan of the experiment, and I was ordered to proceed to Calcutta. A large ward in the General Hospital was set apart for my patients, and I was placed under the orders of Sir James Thompson and the surgeon of the hospital, Dr. Nicolson, by whom my patients were inspected ; and my cases and reports, with every dose of medicine, were sent through them monthly for the information of the Board. Twelve months, to comprise all the seasons of the year, were fixed as the term of the trial, and my results compared with the average mortality for fever and dysentery at the same hospital for the twenty previous years. All the fever patients, on admission to the hospital, were sent to my ward for treatment, which was without exception simply Dr. Lind and Hunter's system, substituting only quinine for bark. I ordered my apothecary to give ℈j of quinine the first moment of admission, before I could be called to see the patient, and one dose of castor-oil, or jalap and cream of tartar, if the bowels were not loose. If they were, this was omitted. The patients afterwards took three, four, or six scruples of quinine during the twenty-four hours. The more severe the fever, the more frequently was the ℈j dose administered, till complete cinchonism was produced, viz., singing in the ears and deafness. General bleeding and even leeches were rarely required, and only for plethoric sailors, just arrived in the country. For these one bloodletting (it

was never repeated) often gave great temporary relief, and I always used it strictly on Dr. Mackintosh's principles, just before the accession, to break the first paroxysm, and give time for the quinine to act. Bleeding after the paroxysm, even where the fever is decidedly continued, is often highly dangerous. I believe, too, that moderate bleeding assists greatly in procuring the rapid absorption of quinine into the blood. Leeches were very rarely used. Purging I greatly object to, for my experiment on malarious dysentery convinced me that it prevents absorption of the quinine.

The bowels, however, require to be freed from their foul contents, caused by the morbid secretions of the congested liver and intestines. For these, if allowed to remain, cause sickness of stomach and vomiting of the quinine. I much prefer large enemata to purgatives, in all cases of fever; but my syringes were in such constant employment for my dysentery cases, that I could not conveniently use them for fever also. I would in fact treat with perfect confidence any case of malarious fever, however severe, with quinine and cold water to wash out the bowels and apply to the head, liver, or other congested organ. I by no means, however, deny the extreme relief that a moderate bleeding at the proper time often gives to a plethoric man—leeches I have found of less value.

I treated in this way 129 patients with one death, the average in the General Hospital for the last twenty years having been one death in every $11\frac{1}{4}$ fever cases. I had therefore less than one-twelfth part of the average mortality.

Among the long-neglected cases of debauched sailors from the streets and shipping of Calcutta, who are the majority of the patients of the General Hospital, and are often sent there after they have been lying sick many days on board their ship, or wandering about the bazaars of Calcutta, till they are picked up insensible by the police, and deposited in the hospital, I had, of course, most numerous patients in all stages of delirium and congestion of the brain, and many with coma, and black sordes on the teeth and tongue; some also with acute and ardent symptoms; but all had the same unvaried treatment, the only distinction made being more frequent doses. For in these dangerous symptoms I always pushed the quinine most freely, yet the result was as above.

[Mr. Hare treated 421 cases of Bengal fever. The general plan was to give scruple doses of quinine to every patient with symptoms of fever, from the first moment of admission, and they frequently had taken forty grains of quinine before he saw them; and it is to be observed that though twenty grains of quinine will produce symptoms of cinchonism in a healthy man, yet a bad fever case will often take four to six scruples daily for often three days without any bad symptoms.]—*Edinburgh Medical and Surgical Journal, Jan.* 1854, *p.* 40.

## 5.—NOTES ON EPIDEMICAL DISEASES.

By Dr. William Addison, F.R.S.

[The interesting remarks in this paper are chiefly upon endemic atmospheres.]

Exhalations arising from marshes, the low shores of rivers and harbours, from jungles, and other uncultivated and undrained places, constitute a poison which produces fevers of various types and degrees of intensity. There are situations in hot climates in which these exhalations generate a poison so intense, that a few inspirations of the air in which they are diffused is capable of producing death ; and there are other situations in which a less highly concentrated poison accumulates, the inspiration of which for a short period produces a fever capable of destroying life in a few hours.

That substances mixed or suspended in atmospheric air may be conveyed with it to the lungs, and immediately enter into the blood, any one may easily satisfy himself by passing through a recently painted room. The vapour of turpentine diffused through the room is transmitted to the lungs with the air which is breathed, and passing into the current of the circulation, will exhibit its effects in some of the fluid excretions of the body, even more rapidly than if it had been taken into the stomach.

The form and severity of disease occasioned by malaria are in some proportion to the intensity of the sun's rays ; it is by a consideration of the points of temperature that the relation of different kinds of fever becomes apparent. Under tropical heats, fevers are most violent, and assume the continued form ; in a more temperate climate the remittent, and in colder countries the intermittent, are at least very usual types. That the miasm which occasions these disorders is of terrestrial origin, seems proved, for we do not find them prevailing among sailors out at sea, whatever may be the temperature under which they cruise. It is when they approach the coast, or land upon it, that they are attacked. Again, it has been observed that in malarious places, fevers abound more in hot and dry years than in those which are more temperate. In the higher grounds of the West Indies, agues occur ; as you descend, and the mean temperature increases, remittents are met with ; and in the lowest and hottest parts, fever becomes continued.

A very instructive fact of this kind has been related by Dr. Ferguson, in Antigua. The barrack was on an eminence, Monk's Hill, six hundred feet above the level of the marshes. So pestiferous was the air of the marshes, that it often happened to a well seasoned soldier mounting the night-guard there in perfect health, to be seized with fever, and die within less than thirty hours ; those at Monk's Hill having no fever of any kind. Seventeen artillerymen were stationed halfway down the hill. Every one of these were attacked with remittent fever, of which one of them died. Thus, in the same

place, malaria in the level plain caused the worst form of fever: at an elevation of three hundred feet, it gave rise to intermittent; and at the height of six hundred, its influence was scarcely felt at all.

It was long ago remarked by Dr. J. Hunter, that a difference of a few feet in height gives a comparative security to persons living in the same building; and the danger of sleeping on a ground floor has been noticed in the writings of Lind and others. With respect to cholera, it has been found that the number and severity of the cases diminish in proportion to the altitude or level of the houses. In London, an elevation of some twenty or thirty feet lessens the per centage of deaths from this disease. It is therefore often a safe precaution to remove the sick from the lower to the higher apartments of the house, —a more speedy and complete recovery having been found to follow.

A moist and calm state of the air is favourable to the outbreak of endemic sickness. "Under certain atmospheric conditions," says Mr. Wagstaff, parochial surgeon, of Lambeth, "when I arose in the morning and found the atmosphere warm and moist, I could always foretell that there would be an increase of malarian disease of some sort." During the plague season in Egypt, the atmosphere is constantly charged with moisture; so much so, that the difference between the wet and the dry bulb thermometer is not more than two or three degrees; the average throughout the year being eight or ten degrees. Moreover, as a general rule, especially in hot climates, it is either at the commencement of the rainy season, or soon after its termination, that endemic disease most abounds. In the West Indies, for example, the last month of the rains, and the two which immediately follow, are generally sickly months.

On referring to the experience of cholera in this country, it appears that the great majority of seizures were between midnight and six in the morning. In Hamburgh, the attacks were so generally in the night, that when the epidemic was at its height, many persons were afraid to go to bed at all; and the same observation has been made with respect to plague when it prevails as an epidemic. Dr. Laidlaw states that in his own experience at Alexandria, during the prevalence of the plague in that city in 1835, eight-tenths of those who were attacked were seized during the night time. In the year 1766, two East Indiamen anchored off the Comora Islands; the crews were attacked by fever, and seventy of the number died. In this instance, the fever affected those of the crew only who slept at night on shore, and having gone through them it ceased. Mr. Shields, in his report of the endemic fever of Batavia, says, "Almost every person who slept only a single night at Edam died. No ill effects were experienced from going on shore in the day time, or among the sick at the hospital. I myself regularly visited the hospital at Edam every day with perfect impunity, till one night I stayed rather late, in consequence of which I was three days afterwards seized with fever." Dr. Lind says, "the nature of an unhealthy shore is such, that no

sooner are the sunbeams withdrawn, than the air in the most sultry climates feels raw, damp, and chilly; and it has been recorded of persons seated in the evening air after sunset, that they have suddenly felt faint, giddy, and sick, and obliged to retire;" these symptoms warning them of the presence of a terrestrial miasm. Experience then in all climates is decisive that there are local sources of sickness arising from terrestrial effluvia, and that their potency is increased by warmth and by moisture, succeeded by cold,—by a low situation, and the night season.

But let us recapitulate the facts :—

Fevers arising from terrestrial effluvia are more severe and fatal in hot than in colder countries. Their onset, form, and characters, bear some proportion to the intensity of the sun's rays. They are for the most part limited to level plains, marshes, low damp situations, jungles on the sea shore, and the banks of rivers. Their attack is usually referred to the night season; and an elevation, sometimes of only a few feet, has been found a security against them. Now, terrestrial effluvia must be as abundant in the atmosphere during the day as at night. How is it then that the diseases they occasion are referred particularly to low situations, limited areas, and the night season? Under what general law then can these facts be arranged;

All substances freely exposed to the heat of the sun give off effluvia. This is so obvious a truth with respect to those which have odour, that nothing need be said to substantiate it. There are other substances quite inodorous when dry; but which give out when moist and warm a strong scent. A stone or piece of earth will give out an effluvium perceptible by the smell when gently breathed upon. Woollen clothes may have no smell when quite dry, but when wet and brought into a warm room they smell strongly. Epsom salts, sulphate of zinc, and other salts, when dissolved in water quite cold, have but little or no perceptible odour; when, however, they are put into solution with boiling water, they give out a strong effluvium. The ordinary operations of cooking furnish numerous similar facts. Observe, too, the peculiar effluvia arising with the vapour when hot iron or coals are quenched with water. These instances show that warmth and moisture facilitate the extrication of an effluvium from bodies in which nothing of a volatile nature is perceptible whilst they are perfectly dry: the effluvium or odour escapes in conjunction with aqueous vapour, and its sensible qualities increase in proportion as temperature increases. Every one must at some time or other have been sensible of the powerful effluvia given out on all sides, when the first rain after a dry period meets the heated soil. And it has been noticed by those who have attended to the matter, that the effluvia are stronger in proportion to the difference between the heated surface of the ground and the cooler superincumbent air. Again, all are aware of the strength of odours in a still atmosphere after a hot day when dew is beginning to appear on the grass, as though volatile matter

carried off by the evaporation of moisture was made sensible in some especial manner, by condensation of vapour. When the moisture which condenses on the walls and windows of a room in which large numbers of persons are assembled, is examined, it is found to be impregnated with animal matter.

In the example of the heated saline solutions, aqueous vapour, with its associated effluvium issuing from the hot liquid, is immediately condensed by the colder air, and hence the readiness with which the presence of the effluvium is at that moment detected.

Evaporation takes place from every part of the earth's surface, and the rate or quantity of the aqueous vapour disengaged is in proportion to the temperature. When the ground is hot and dry, evaporation, upon the first fall of rain, is prodigious.

From the instances which have just been stated, we must conclude, that terrestrial miasms are diffused through the atmosphere in combination with the vapour exhaled by evaporation ; and that quantity or potency increases in proportion as the temperature of the surfaces from which they arise increases. The miasm is dissolved by the vapour, and vapour is dissolved by the air. These are effects of the sun's rays.

The researches of Leslie, Romford, and others, have shown that different bodies have different powers of radiating caloric, and that the nature of the surface has an important influence over the process. This produces corresponding variations in the rate of cooling ; those surfaces which radiate heat most rapidly becoming cold much the soonest.

When the sun descends below the horizon, every portion of the earth's surface cools by radiation ; and a reduction in the temperature of the superincumbent atmosphere necessarily ensues. But, as this radiating property is very different in different surfaces, and in different situations, so great variations are occasioned in contiguous places, not only in the temperature of the air, but also in the amount of condensation of vapour ; more mist, more fog, or dew, appearing where radiation is greatest. These are the effects of the night season.

Dr. Wells frequently observed the temperature of a grass meadow at night to be several degrees below that of the air some feet above it ; and thermometers, placed in different situations upon the ground, were found to mark very different temperatures, the greatest amount of dew appearing where the cold was greatest. On clear and still nights, a difference of *thirty degrees Fahr.* has been noticed between the temperature of good radiating surfaces and that of the air some height above them. More frequently the ground has been observed ten degrees colder than the air twenty or thirty feet above it : and it is thus that the leaves of trees have been found quite dry when the grass of an adjacent meadow is loaded with dew. "I had often smiled," says Dr. Wells, "in the pride of half knowledge, at the

means frequently employed by gardeners to protect tender plants from cold, as it appeared to me impossible that a thin mat, or any such flimsy substance, could prevent them from attaining the temperature of the atmosphere, by which alone I thought them liable to be injured; but when I learnt that bodies on the surface of the earth become often colder than the air, by radiating their heat to the heavens, I perceived immediately a just reason for the practice which I had before deemed useless. Being desirous, however, of acquiring some precise information on this subject, I fixed perpendicularly, in the earth of a grass-plat, four small sticks, and over their upper extremities, which were six inches above the grass, I drew tightly a very thin cambric handkerchief. In this disposition of things, therefore, nothing existed to prevent the free passage of air from the exposed grass to that which was sheltered, except the four small sticks; and there was nothing to radiate downwards to the latter grass, except the cambric handkerchief. The sheltered grass, however, was found *five degrees Fahr.*, or more, warmer than the unsheltered. One night the fully exposed grass was *eleven degrees* colder than the air; but the sheltered grass was only *three degrees* colder." A canopy of clouds, walls, buildings, or any other shelter from the aspect of the open sky, act upon the same principle, and in the same way.

The question, whether on any particular night, condensation will or will not occur, and the period that may elapse after sunset before it takes place, is determined by the relation between the temperature of the air and the temperature of the dew-point. This is constantly varying. When the interval between them is large (ten or twelve degrees), some time is required for the heat of the air to fall to the dew-point, condensation is delayed, and the air is said to be dry. On the other hand, when the interval is small (one or two degrees only), condensation occurs immediately after sunset, and the air is said to be damp, and those surfaces which radiate heat quickly become soon evident, especially should the atmosphere be free from cloud, and without wind. The banks of rivers and lakes, open plains, marshes, meadows, and low situations, are wetted with dew, or the first to be shrouded in mist or fog; and they are sensibly colder than other places.

Thus it is found that the conditions under which malarious diseases arise accord with the laws of evaporation and terrestrial radiation; and we conclude, that the precipitation of vapour—mist, haze, fog, or dew—may be taken as evidence of the concentration of the poison. Condensation of vapour commences; and it appears a consequence of this, that associated miasms, left alone, begin to show their proper qualities. Not that at all times noxious effluvia pass into the air, so as to be made sensible whenever dew or fog appears; but that when they do exist, quantity is determined by heat and evaporation, and poisonous qualities brought out when the associated vapour is condensed.

The peculiar properties of many bodies disappear in combination. There is nothing, therefore, to negative the supposition that the hurtful qualities of terrestrial effluvia may appear only when their union with aqueous vapour is decomposed : and the theory accounts for the comparative absence of noxious qualities in the day time. It is not more difficult to conceive the irregular and unequal dispersion of hurtful exhalations over limited spots or tracts of country, occasioned by terrestrial radiation, than to be convinced of similar inequalities in the distribution of clouds and fog. And this would explain the immunity afforded by elevation. Moreover, sundry phenomena in relation to diseases have been attributed to the light of the moon ; but, when the moon shines, the atmosphere must be free of clouds, and a clear atmosphere is the most favourable to the specific influences of radiation.—*Association Medical Journal, Jan.* 20, 1854, *p.* 56.

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6.—*Case of Scarlatina produced by Inoculation.* By R. Barrington Cooke, Esq., Scarborough.—During the summer of 1850, I attended a child, aged seven years, an out-patient of King's College Hospital, who was suffering from an attack of scarlatina maligna, with sloughing sore throat. The child died, and on making a *post-mortem* examination of the body, I inflicted a small wound on the third finger of the right hand. The wound shortly after became inflamed, and suppurated, the hand and arm painful; and red lines in the course of the lymphatics, extending up the arm, showed the track of absorption of the virus; the glands in the axilla likewise became painful and enlarged. During six days, I experienced a good deal of uneasiness and pain in the limb, accompanied with some irritative fever. Towards the end of the seventh day the characteristic eruption appeared over the body, accompanied with sore throat.

The swelling and inflammation of the arm now began to subside. The attack, which was not of a severe character, ran its usual course, and in about three weeks from the commencement of the illness, I was enabled, though in a weak state, to leave town, when after a short sojourn in the country I returned to my duties as physician-accoucheur's assistant. The urine was albuminous, but no œdema supervened. Three years previous I had suffered from a slight attack of the same disorder.

In concluding, I would remark, first, that the mildness of the attack in my own case, as contrasted with that of the child, arose probably from the difference in age between the subject affording the virus and myself; our different positions with regard to air, diet, &c., and it may be, some degree of immunity from the effects of the previous attack; secondly, that the period of latency, or incubation, was more prolonged, owing, probably, to delay in the process of absorption through the

lymphatics, whereas, in Dr. Rowland's case, the virus seems to have been at once received into the venous system.—*Medical Times and Gazette, Dec.* 17, 1853, *p.* 639.

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7.—*On Certain Pathological States of the Blood, especially Characterizing many Dangerous Diseases, and of the Intentions and the Means by which these States are most Successfully Treated.* By Dr. James Copland, F.R.S., &c.—[The following observations are the substance of a paper read before the Medical and Chirurgical Society.]

The morbid state to which the author more particularly directed attention, might be termed contaminated or vitiated according to the causes of alteration, as these causes might be external or internal in respect of the frame; external agents and influences, as well as internal vital and functional changes, might equally be the sources of this vitiation, or both might co-operate. If a cursory view of the sources whence vitiation or contamination of the blood proceeded were taken, they would be found most numerous, varied, and often associated, and that they infected or invaded the blood by one or more channels; and although manifested in every phase and grade of morbid change, yet they frequently preserved certain specific features. These morbid states of the blood might arise—First, from causes acting on the digestive canal, and the vessels proceeding from this canal; secondly, from agents taken in by respiratory action, and through the medium of the respiratory surface; thirdly, from causes acting upon any part of the external surface or any tissue or part of the frame; fourthly, from the arrest of any depurating or eliminating function, or even from the impeded or imperfect performance of such function; fifthly, from the absorption or passage of any morbid purulent secretion or excretion into the circulating mass; and, sixthly, from the conditions of vital influence, or the organic venous power endowing the heart and blood-vessels, and from the reciprocating influence exerted by the vascular system, and the hæmato-globulin circulating through the system. The author then detailed copious illustrations of the operations of the several causes of contamination passing through these channels. The effects of various kinds of food; emanations from numerous sources of pollution; air vitiated by overcrowding; absorption by an abraded, punctured, or incised wound; the passage of sanious, puriform, or other morbid matters into the circulating current; defective action in, and imperfect discharge of, the several depurating functions, so necessary to the preservation of a healthy state of the blood; and, lastly, influences or agents, extrinsic and intrinsic, which either excite or depress the organic nervous system, reacting on the vascular system, and changing the blood circulating in it. The author adverted at some length to the operation of these conditions on the blood itself, manifested by a destruction or waste of the hæmato-globulin or red

corpuscles. He was led to believe that these changes consisted—first, in a metamorphosis of the globules, or a partial vital conversion or decomposition of them; secondly, by a portion of the globules or hæmato-globulin being converted into bile; thirdly, by the epithelial cells thrown off by the several emunctories, especially the kidneys, skin, and intestinal mucous follicles, being transformed blood-globules; and, fourthly, that they are also partly expended in the elaboration of the genital secretions in both sexes. These were the chief modes or sources of waste.—*Lancet, Nov.* 19, 1853, *p.* 483.

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## 8.—ON NITRATE OF POTASH IN RHEUMATISM.

By Dr. Richard Rowland.

[Dr. Basham speaks highly of the use of nitrate of potash in rheumatism. Dr. Rowland relates thirteen cases in which it was employed, in some cases after colchicum had failed. Three drachms of the salt, dissolved in a pint of water, were taken in the twenty-four hours; but the dose varied according to the case. Dr. Rowland says:]

From a summary of these cases, it appears that the average duration of the acute symptoms after the commencement of the treatment was about eight days. In three cases the rheumatism disappeared before the seventh day. In one it was protracted to the eighteenth. But most of the patients had the complaint some days before their admission to the hospital, and sometimes it was not possible to obtain precise information as to the date of the seizure; but so far as this could be determined, the whole average period of the acute cases appeared to be about sixteen days.

Taking the results from the most unfavourable aspect, it must still be admitted that they support the opinion of the efficacy of the nitrate of potash in rheumatism. In some of the cases the relief followed its exhibition almost immediately, and the improvement was rarely delayed for any considerable period. Besides the very obvious advantage of removing a complaint so painful as rheumatism as speedily as possible, it is otherwise important to lessen its duration, and especially because it diminishes the chances of those frightful complications which may attend the disease at every stage of its course.

In no instance was there even threatening of valvular disease. The condition of the heart was carefully watched at each visit, and in all the patients it preserved its natural sounds and rhythm. This scrutiny was always repeated before each patient left the hospital, and with similar negative results. It is true that in two instances the endocardial murmur existed; but in both these patients the complication did not commence in the hospital. One had an acute attack of rheumatism, in which the nitrate was prescribed with complete success, no vestige of heart affection being present on her dismissal. But a fort-

night afterwards she was brought to us again, having had a relapse of the complaint, and now a loud systolic murmur was immediately detected. In another the heart was hopelessly injured previous to his admission. These cases cannot be therefore set down as evidence against the utility of the nitrate of potash in rheumatism. At the same time the number of examples is far too few to establish the probability of immunity from heart complication under this treatment. It can only be said that nothing of the kind occurred in these patients.

With regard to the form of the disease in which the salt is most likely to prove beneficial, the testimony derived from the cases now cited decidedly shows that its efficacy is most remarkable in acute rheumatism; and it might almost be said that the beneficial result was the more striking in proportion to the activity of the attack. When subacute rheumatism supervened upon the chronic, although the nitrate was commonly efficient in removing the former, it seemed to exercise no influence over the latter. So invariably was this observed, that I have ceased to prescribe this medicine in purely chronic cases. Pains of a gouty tendency, and the capsular variety of rheumatism, appear to be equally irremediable by this means. No preliminary treatment was adopted, but the salt was almost invariably commenced at whatever period of the complaint the patient happened to be on his admission. There is no reason to suppose that its influence is greater at one stage than at another. It should be stated, however, that an aperient was prescribed when it was required, and sometimes an anodyne at night, when the sufferings were so great as to prevent sleep.

It is not easy to determine the mode of action of the salt in this affection. The theory that it removes from the system a supposed redundance of the lithates and lithic acid can hardly be sustained. Not only was there no marked acidity of the urine in several of the patients, but in two of them it was strongly alkaline, and in one loaded with phosphates. Even during the continuance of the nitrate the urine regained its property of slightly reddening litmus-paper. Nor was there any sustained sensible action either on the bowels, skin, or kidneys. Purging never once occurred. In a few cases the perspiration was occasionally increased, but by no means continuously; and bearing in mind the tendency to copious sweating in rheumatism, it might be questioned whether the salt does not exert an influence in moderating, rather than augmenting the cutaneous discharges. The urinary secretion was increased more frequently, and rather more permanently, but the diuresis was never very remarkable. Whether the salt possesses any action on the fibrine of the blood these observations do not enable me to determine, but the symptoms and aspect of some of the patients scarcely warranted the idea that there was an excess of that ingredient in the circulating mass.

The dose of the nitrate never exceeded half an ounce, and it was sometimes limited to three drachms daily; it was dissolved in a pint

of water, the patient being directed to take the whole in twenty-four hours. This is a much smaller quantity of the salt than it has been recommended to employ for the cure of rheumatism; but there is a manifest advantage in prescribing it in as small a dose as will answer the purpose, for there will be less danger of its producing gastric or renal irritation; and when two or three ounces are given daily, a large quantity of fluid is required for the necessary dilution, and this circumstance alone would render the remedy too disgusting to admit of its general adoption. No injurious consequences arose in any instance from the exhibition of the medicine, nor was there any complaint made by the patients of the disagreeableness of the remedy, or of any inconvenience arising from its use. There may be an apparent exception to this fact in one patient, who complained of dysuria when undergoing treatment with the nitrate. But as this symptom continued, although the medicine was withdrawn, and subsided after it had been again prescribed, it is hardly probable that the irritation had been occasioned by it in the first instance.—*Lancet, Feb.* 11, 1854, *p.* 149.

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9.—*Treatment of Acute Rheumatism by Acetate of Potash.* By Dr. Golding Bird, F.R.S.—[Dr. Bird seems to depend on this remedy more than any other in the treatment of acute rheumatism. But, after all, it appears that the efficacy of lemon-juice itself depends not so much on the acid as upon the supercitrate of soda which it contains. It seems that all these kinds of salts are useful when they act powerfully on the kidney, and thus eliminate poisonous matter from the system. Thus citrate of potash, citrate of ammonia, acetate of ammonia, nitrate of potash, as well as the acetate of potash, all act very beneficially in rheumatism. On the subject of acetate of potass, Dr. Bird affirms]

That he has never seen the disease in question yield with so much facility to any other remedy. In the several cases in hospital practice under his own care, Dr. Bird has seen the cure to be more rapid, and the immediate relief to the patient more marked, by the use of acetate of potash in quantities of half-an-ounce administered, largely diluted, in divided doses in twenty-four hours, than by any other treatment. In three days he has frequently found the exquisite pain of the joints nearly absent, the patient comparatively comfortable, and able to bear with greater ease the helpless state in which the still swollen joints placed him. In no cases have any bad consequences succeeded the employment of the remedy, while complete recovery has been more expeditious, and the ill effects of colchicum and mercury have been avoided. The most interesting and no less important fact has been noted by Dr. Bird in his experiments with this salt, namely, that the pain of the disease remarkably declines so soon as the urine becomes alkaline and rises in specific gravity; and he further records his

impression, that the tendency to affections of the heart is very much lessened after the alkalinity of the urine has been established.

Dr. Bird's experience of the efficacy of the acetate of potash in the treatment of acute rheumatism has been derived from a large number of cases. The only adjuvants he has employed have been a mercurial laxative, if constipation existed, and a full dose of Dover's powder on the first day or two of treatment, if the pains be severe; the joints being wrapped in sheets of wadding, a plan the author has followed since he experienced in his own person the comfort it affords.—(*Urinary Deposits*, 4th edit.)—*Edinburgh Med. and Surg. Journal, April* 1854, *p.* 427.

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## 10.—ON THE INFLUENCE OF LIQUOR POTASSÆ ON THE URINE IN RHEUMATIC FEVER.

By Dr. E. A. Parkes, Professor of Clinical Medicine in University College, &c.

The following summary expresses in general terms the action of liquor potassæ on the urine of twenty-four hours:

| Urinary Constituents. | Condition in Rheumatic Fever. | Effect produced by Liquor Potassæ in large doses. |
|---|---|---|
| Water . . . . . | Greatly diminished . | Slightly increased; (over rheumatic average). |
| Solids . . . . . | Increased . . . . | Still more increased. |
| Urea. . . . . | Probably increased . | Probably increased. |
| Uric Acid . . . . | Increased . . . . | If affected at all, slightly increased. |
| Creatine, &c. | Undetermined . . . | |
| Sulph. containing comp. | In considerable quantity | Probably increased. |
| Chlorine . . . . | Diminished . . . . | Unaffected. |
| Sulphuric Acid . . | Greatly increased . . | Still more increased. |
| Phosphoric Acid . . | In some quantity . . | Uncertain. |
| Bases . . . . . | Undetermined . . . | |
| Insoluble Salts . . | Undetermined . . . | |

The urine in rheumatic fever appears to have peculiarities which distinguish it from the urine of other fevers. It resembles the typical febrile urine in its deficiency of water, in its depth of colour, in its great per-centage of solids, and in the rapid deposit of dark urates. But apart from possible differences connected with the urea, and extractives, it differs from the febrile urine of pneumonia and the specific fevers in the greater amount of the absolute excretion of solids (i.e., in 24 hours) and in the enormous excess of sulphur, and its derivatives.

The excretion of sulphuric acid is far greater than in any other febrile disease which I have examined,—viz., than in small-pox, typhus and phoid fever, scarlatina, erysipelas, pyæmia (with purulent arthritis), pleurisy, and pneumonia. In these cases the sulphuric acid has been also in excess of that which would have been formed during healthy tissue metamorphosis, except in some cases of pneumonia in which the sulphuric acid (in common with other urinary ingredients) has been retained in the system during hepatization, and been poured out afterwards during resolution.

The excess of sulphuric acid in the rheumatic urine is not due to an excess of febrile action in this disease, over the other fevers just enumerated. In cases of typhoid fever and scarlatina, the temperature has been higher than in rheumatic fever; and yet the amount of sulphuric acid passed in 24 hours has not reached to half the quantity. The sulphuric acid is not, then, in any close proportion to the temperature. As the temperature is usually considered to be a correct indication of the rapidity of tissue-metamorphosis in febrile diseases, it follows that rheumatic fever is an exception to the rule, and that the sulphuric acid is in excess of what would have been predicated from the amount of fever.

It appears, therefore, a fair inference that in rheumatic fever there is a source of sulphuric acid, independent of the augmented disintegration of tissues, as measured by the heightened temperature, and it may perhaps be conjectured that chemical analysis will hereafter demonstrate the existence in the blood of some compound richer in sulphur than fibrine and albumen, which during the height of the disease is rapidly disintegrating, and forming, probably among other products, sulphuric acid.

The effect of liquor potassæ, of the bicarbonate, and perhaps of the other alkalie is at once to aid this disintegration, and to increase the elimination of sulphuric acid, by augmenting the alkalinity of the blood. If this hypothesis be correct, the administration of alkalies in rheumatic fever would acquire a basis more rational than that usually assigned—viz., that they merely neutralize acid already formed.

With respect to the efficacy of liquor potassæ in rheumatic fever, although the cases are so few in number, yet as it is unlikely that additional cases can be treated so rigidly without other medicines, and as in fact other remedies (mercurial purgatives, colchicum, opium, hot air bath, &c.), ought to be employed, I may mention the general conclusions which may be deduced from these four cases.

No symptom was immediately affected, except the pulse; this was generally, but not always lowered, and sank, although the temperature continued high, to 80, 70, and even lower. The febrile heat (as measured in the mouth), the articular pains, and the perspirations, were not affected, except in so far that the duration of the disease was shortened. The effect on cardiac complication was uncertain; in one case pericarditis came on, but there was a strong suspicion that it had

actually begun before the medicine was commenced; in two cases basic systolic murmurs appeared, in one case before, in the other (a man), decidedly after the potash was commenced. The murmur, however, disappeared during convalescence.

The duration of the disease was in three cases short, although the severity of the early symptoms led to the belief that it would be obstinate and long-continued. The first case lasted scarcely a week; the second eighteen days; and the third (relapse) about seven days. In the fourth case (old and recent heart-complication, pericarditis) the duration was greater, and the patient was not convalescent till the 23rd day. The average of the whole was 13·75 days from the first symptom; but as an average of 3·25 days occurred before treatment, the actual period from commencement of treatment to perfect freedom from joint-pain and fever, was ten and a half days. This result (if it occurred in all cases) would certainly be favourable, but it is well known that other observers have obtained equally fortunate results from very different treatment; so that the superiority of the treatment by liquor potassæ, *per se*, cannot be held to be sufficiently proved.

A great disadvantage in liquor potassæ is its nauseous taste, and frequently also, after a time, if it be given in large doses (and this is necessary), the stomach does not tolerate it well.—*Brit. and For. Medico-Chirurg. Review, Jan.* 1854, *p.* 248.

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11.—*On the Action of Iodide of Potassium.* By Dr. R. W. Basham.—[Any observations upon that so much neglected branch of medical science, Therapeutics, demands every attention. Dr. Basham makes the following important remarks on the action of iodide of potassium. He believes, that though in other forms of disease this drug presents pretty steady characteristics, yet that it is in diseases of a rheumatic character that its beneficial results are most uniformly seen. He says:]

From time to time cases have come under observation, presenting the usual symptoms of chronic rheumatic pains, gnawing and erratic, with paroxysms aggravated by atmospheric changes; and there has been diffuse tenderness of the periosteal surfaces nearest in contiguity to the skin, as the scalp, clavicles, ulna, tibia, &c.; sometimes distinct tumefaction with exquisite tenderness, and these nodal elevations in some have been evanescent, in others, persistent during the whole course of the malady. It has been frequently noticed, and practitioners of experience cannot have overlooked the fact, that some of these cases materially and rapidly improve under the administration of the iodide of potassium, while in others, with symptoms in all respects identical, no benefit has been derived or improvement become apparent till the patient has been put through a course of the bichloride of mercury and sarsaparilla.

I was once inclined to think that these varying results depended on peculiarity of constitution, and that the treatment of such cases by one or other of these remedies must remain, to a certain extent, empirical, and destitute of any settled principle. But a careful examination of all the precedent conditions in the histories of such cases exhibited the following facts:—That in all the cases in which the iodide had been productive of benefit, the patient at some antecedent period had been salivated, in some for syphilis, in others for an inflammatory or other disease; while in those cases in which no benefit was obtained by the iodide, the patient had either never taken mercury to salivation, or had suffered from syphilis or gonorrhœa, which had either been neglected or treated only locally. It appeared then that there were two predisposing causes to the same form of chronic periosteal rheumatism—the impregnation of the system by mercury, and the lurking and subtle influence of the syphilitic virus.

In my clinical lectures for some years past, I have directed the attention of students to these facts, and impressed on them that the treatment of these cases of chronic periosteal rheumatism should be based on these principles: the first form of the disease requiring the iodide of potassium, the second form, the agency of alterative doses of some mild preparation of mercury.—*Lancet, Nov.* 19, 1853, *p.* 478.

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12.—*Local Treatment of Acute Gout.*—The extreme pain attending acute gouty inflammation may, it appears, be very quickly relieved by the application of pure spirits of wine. We witnessed a trial of this remedy by Dr. Goolden on a patient in St. Thomas's Hospital, who was suffering at the time agonising pain in the foot, and the result was an almost immediate relief. Dr. Goolden informed us, that he was in the habit of using it very frequently in private practice, and always with the most pleasing effect. He believed it to act by being absorbed, and not by mere evaporation. The mode of application is by a piece of lint saturated in the spirit, laid over the part, and then covered with oil silk.—*Med. Times and Gazette, Nov.* 12, 1854, *p.* 501.

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13.—*Local Applications in Chronic Gout and Rheumatism.*—The ancient remedy of soda poultices for chronic gout appears to have fallen into very unmerited disuse. We have seen lately numerous cases in which very great apparent benefit was produced by them. The quantity of soda used was one drachm mixed with a common bread poultice, and applied hot over the affected joint every night. Many cases affording illustraions of the good effects resulting from iodine-painting of joints affected with chronic rheumatism, have recently been under the care of Dr. Bennett, in St. Thomas's Hospital.

This remedy also, though long known, does not appear to be so generally used as it deserves. It was, we believe, a great favourite with the late Dr. Pereira.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

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14.—*On the Medicinal Constituents of the Lemon.* By Dr. Cogswell.—Lemon-juice is not always equally successful in the same number of cases of rheumatism. Dr. Cogswell thinks there may be something due to the difference he finds to exist in the constituents of the fruit. He says:]

The essential oil belonged to a class corresponding to the formula $C_5 H_4$, and including the other oils of the fruits of the Aurantiaceæ, the oils of turpentine, juniper, savine, elemi, copaiba, cubebs, and pepper. Some of them were approved remedies in rheumatism. From trials made with the oil of lemons in this disease, in flatulent dyspepsia, and leucorrhœa, the author entertained a high opinion of its therapeutical value, and thought that the chemical fact stated suggested the possibility of bringing together the various scattered evidences on the remedial efficacy of the oils of the same class, and referring them to a general law. The fresh juice, when evaporated in a water bath, yielded 8·5 per cent. of solid extract, and the ash obtained by incineration amounted to 0·27 per cent. The latter contained sulphuric and phosphoric acids, potash, lime, magnesia, and iron. A controversy existed as to whether the citric acid or the potash in lemon-juice is the true medicinal ingredient. In reviewing the evidence, the author considered it an error to suppose that either would answer so well separately as united. The efficiency of the juice probably depends not on one or other of the ingredients, but on the whole combined. In using the essential oil, he gave it in doses of about fifteen minims, with two drachms of vinegar, in barley-water, always being careful to keep the bowels freely open by purgatives. If the efficacy of the juice in rheumatism depended on anything more than the refrigerant action of the citric acid, he thought the true anti-arthritic agent was probably the essential oil when present, and he repeated his views as to the necessity of establishing a definite standard for the composition of the juice.—*Lancet, March* 18, 1854, *p.* 307.

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15.—*On the Efficacy of Galium Aparine in Certain Forms of Cutaneous, Scrofulous, and Cancerous Diseases.*—[Dr. Winn read a paper on this subject before the Medical Society of London. He stated his belief that the galium aparine possessed remedial powers in the above diseases which promised to equal if not surpass those of arsenic.]

When Dr. Winn first drew the attention of his professional friends to the properties of this plant, two years since, he was only aware of

its efficacy in treating lepra; since then he has ascertained its benefit in other skin diseases. Dr. Winn then related the circumstances which led to his acquaintance with the galium aparine. A friend of his in Truro, who had suffered for many years from lepra vulgaris, and had taken all the usual remedies in vain, informed him that he possessed at last a remedy for his troublesome complaint in a common wild plant of which he did not know the name. Dr. Winn found this plant to be galium aparine, which grows abundantly in Edgland, and on making further inquiries, learnt that three other persons in that district had been cured by the same remedy, one of whom had been discharged from St. George's Hospital as an incurable patient. After a botanical sketch of the plant, Dr. Winn expressed his belief that the ancients were acquainted with this plant, and that it is identical with the *απαρινη* of Dioscorides. On referring to some very old authorities, he ascertained that the galium was much in vogue as a domestic remedy in this country many centuries since: it was then highly extolled as a cure for cancer, scrofula, leprosy, and dropsy. An Italian writer, Giueseppe Terramosia, had published in Schmid's Jahrbucker an account of several cases of scrofula, in which the galium appeared to produce rapid absorption of enlarged scrofulous glands. Diebach had also recommended it for phthisis, ascites, and scrofula. Richter considered it beneficial in strumous affections. Dr. Winn wished to direct attention to the fact of galium having been efficacious in glandular affections as well as lepra; it tended to confirm the theory that the two diseases were owing to the same cause—a strumous diathesis. It was also a remarkable circumstance, and one not generally known, that arsenic is highly beneficial in glandular swellings. Mr. H. Rees, an experienced and successful practitioner in the diseases of children, informed Dr. Winn that he had tried arsenic in infantile glandular affections, and proved it to be a most efficacious remedy. When first Dr. Winn used the galium, it was in the form of a decoction; but finding this mode inconvenient, he requested Mr. Hooper, of Pall-Mall, to prepare an inspissated juice, and that able operative chemist had succeeded in making a very valuable preparation. A teaspoonful of the juice equals in strength a half pint of the decoction. In ordinary cases a drachm, taken three times daily, will be found sufficient, but in obstinate affections the dose must be doubled. The juice of the galium had been analyzed by Terramosia and Robert Schwartz. The former gives as its constituents—acetate of potash, gallic acid, tannin, extractive, water. The analysis of Schwartz is somewhat different. He gives its component parts thus—galitannic acid, citric acid, rubichloric acid, chlorophylle, starch. With regard to the *modus operandi* of the galium, Dr. Winn said he had little to offer but what was merely conjectural. Many of his patients were conscious of an increased flow of urine during its use, possibly from its acting on the kidneys as a depurating agent. The class of cutaneous diseases which had been benefitted under his own observation was chiefly that de-

pendant on a case of dyscrasia, such as lepra and psoriasis. He also considered these diseases as often arising from a strumous diathesis. The gentleman suffering from lepra, whose case had been referred to at the commencement of the paper, was one of a very consumptive family. In him the family disease had manifested itself under another form. It is highly important that the fluid extract be perseveringly used. Many patients have failed, no doubt, from not having given the remedy a sufficient trial. The same may be said of arsenic. Dr. Winn had tried the galium in nineteen cases of skin disease. Of these, five were cases of lepra, six of psoriasis, four of eczema, two of lichen, one of inflamed acne, and one of ordinary-coloured syphilitic eruption. In nine of these cases the benefit derived from this medicine was very striking. In one, an instance of lichen circumscriptus, the effect produced by substituting the galium for other remedies was almost marvellous. With regard to the efficacy of this plant in the treatment of cancer, Dr. Winn was solely indebted to the experience of Mr. Bulley, of the Bucks Hospital, who had forwarded to him an account of three cases of cancer, in which the galium appeared to exercise a remarkable influence in arresting the disease. Dr. Winn was recently told that large quantities of galium are sold at Covent-garden annually, and that it is chiefly used by the purchasers as an external application in cases of cancer. This fact strongly corroborates Mr. Bulley's observations.—*Lancet, Feb.* 11, 1854, *p.* 155.

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16.—*Treatment of Dropsy.* By Jonathan Toogood, Esq.—[Dr. Toogood, in his 'Reminiscences of a Medical Life,' gives us the practice of his old master, Mr. Dawe, of Bridgewater, in the treatment of dropsy. He says:]

"During my pupilage I have often seen patients who consulted him, with bloated and livid countenances, oppressed breathing, œdematous extremities, and other symptoms of great obstructions, with greatly diminished secretion from the kidneys, so much relieved that they have continued well for many months together, and by the occasional repetition of the same treatment, have lived for years in comparative health. His plan was to give a dose containing eight grains of calomel, with the same quantity of jalap, and one grain of emetic tartar in the morning. This acted violently on the stomach and bowels, and used, according to his own expression, 'to ruffle his patient a good deal;' during and after its operation he directed a little wine or other cordial; afterwards the patient generally fell asleep, and awoke relieved. He then prescribed three grains of powdered squills, with two of digitalis, every night for six successive nights, and a mixture with bitter infusion, and small doses of tincture of squills and spirit of nitre, twice a day. The digitalis was then omitted, and the other medicines continued for six nights more; and

if the symptoms were not much relieved, the digitalis were resumed again. If the case was unusually obstinate, the drastic dose was repeated, and sometimes the dose of the digitalis was increased from two to three grains. But this was rarely done ; very little attention was paid to the origin or cause of the disease ; the great object was to 'unload' the patient."—*British and Foreign Medico-Chirurgical Review, April* 1854, *p.* 483.

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## 17.—REMARKS ON CHRONIC INFLAMMATION.

By Dr. C. Handfield Jones, F.R.S.

[When we have very little exact knowledge of the real causative condition of a morbid action, we are apt to class it under the term chronic inflammation. Cirrhosis of the liver, Bright's disease, white pericardial thickenings, &c., we are apt to regard as slow inflammatory processes in the respective organs. Dr. Jones observes :]

I would wish to name all the morbid changes in which the character of growth—of new formation—decidedly predominates over that of inflammation, according to their principal feature. I would call them simply fibroid thickenings, or fibro-cellular growths, and thus avoid giving them a name, either merely trivial, or of doubtful correctness. The matter is not one of nomenclature merely; it has important bearings on practice. Suppose a case intrusted to our care in which the liver was found considerably enlarged, projecting below the ribs, and that we have satisfied ourselves that the enlargement depends neither on engorgement with blood, nor on fatty change, nor on bacony deposit. The probability, then, is very strong that it is in a condition of cirrhosis, the fibrous tissue between the lobules being prodigiously increased in quantity. Can we hope by the administration of mercury or iodine to remove this deposit ? If it were simply inflammatory, the attempt might be successful; but as it is a growth, one may confidently predict that it would be fruitless if not injurious. The same remark will apply more or less completely to any of the other instances before mentioned.

It seems to me that observers have not sufficiently held in view, although generally admitting as a matter of course, the vast predominance of that unknown force, call it what we please, which determined and still determines that here bone and there muscle, and in another spot nerve, and in another tendon, should be formed. There is some such force, and it is certainly liable to be deranged, and its derangements are just those which are most difficult to rectify. This perversion of the nutritive act (to borrow Andral's phrase) is that which determines the origin and growth of a cancerous, or a fibrous, or any other kind, even of a fatty tumour. It is the same, I believe, which causes the textural changes above enumerated, and some others which might be added, and not inflammation, which of itself and in its best marked form, produces no exudation which is capable of

growing and enlarging. It is this property of vegetative increase which makes the removal of new formations and all allied productions so difficult: mere inflammatory effusions we can melt down and get absorbed, but these resist our "sorbefacient" remedies with the same persistence almost as the natural tissues.

The degenerative process which constitues true morbus Brightii does not quite come under the above class of morbid changes. The best observers are agreed that production of new interstitial tissue constitutes no essential part of the morbid action. Most writers incline to view it as a nephritis of more or less chronic character; but the great name of Prout can be cited in support of the view that the substratum of the process is something essentially different from inflammation. My own observation has always inclined me to adhere to this opinion. In the enlarged, often mottled, kidney we see simply a derangement of nutrition, producing hypertrophy of the epithelium concurrently with malperformance of its function. The albuminoid cell-growth does not undergo its normal changes; and instead of forming the secretion, it collects in the tubes, either choking them up and distending them, or getting washed out in the stream from the Malpighian tufts. In further stages, or in more rapid degrees of change, the tubes and epithelium break up into mere detritus. In all this process we see really nothing to justify us in considering it as inflammation. So, also, in the atrophic form, the small dwindled kidney, we find no satisfactory evidence of anything else than a gradually supervening impairment of the nutritive process. The epithelium wastes, and the tissue decays, and collapses; thus far is certain; but how little is there to show that this is dependent on previous inflammatory disease? On the contrary, the frequency of recovery from acute congestion (as that of scarlatinal dropsy) shows that inflammatory and degenerative actions are widely different in their nature and results. The one exhibits the perturbation of healthy action by an intervening cause, the other is the decay of vital power from innate or induced weakness.

The subjoined scheme illustrates the transitions that seem to exist between two of the chief types of disordered nutritive action. In inflammation of acute sthenic character the hyperemia is a main element, and the exudation is non-vegetative. In cancer (say encephaloid) there is no apparent or necessary hyperemia, but the exudation is endowed with a vegetative power of most active growth. In simple deposit, as of tubercle or bacony matter, there is neither hyperemia nor manifestation of vegetative power; the sole morbid change is the deteriorated state of the plasma.

| *Inflammation.* | | |
|---|---|---|
| Acute sthenic. | | *Encephaloid cancer.* |
| Subacute. | Tubercle—bacony matter. | Fibrous tumour. |
| Chronic. | *Simple deposit.* | Fibroid thickening. |

—*Association Medical Journal, Dec.* 9, 1853, *p.* 1077.

18.—*Case of Purpura Hemorrhagica treated by Turpentine.* By Dr. George Willis.—[A gentleman, aged 22, on Nov. 9th, while coughing, expectorated a large quantity of dark coloured blood. The respiratory sounds were natural, but the limbs were found covered with the peculiar eruption of purpura. He was an excessive smoker, and was generally from this cause in a state of salivation.]

The treatment consisted in an acid mixture, and a dose of aperient pills; the bowels being sluggish. For the following three days this treatment was continued without change, except that a grain of ipecacuan was added to the pills. The hemoptysis subsided.

On Nov. 13th, I was informed by the patient that, during the night, he had suffered severe pain in the testicle; that this passed off, but that, on voiding his urine, he had found it dark in colour. On examining it myself, I detected that a large quantity of blood had been thrown off with it.

On Nov. 14th, I ordered ten grains of gallic acid to be given with each dose of the mixture, and an aperient draught, as the bowels had not been acted on for two days.

Nov. 15th. The bowels have been relieved, but the urine continues of the same character as yesterday. The blotches on the tongue and gums have disappeared, but two small ones have presented themselves on the upper lip, and on the side of the nose. The treatment to continue.

Nov. 16th. No improvement. Treatment changed. The acids to be discontinued, and replaced by turpentine in the following form:—

℞. Spiritus terebinthinæ ʒij.; sacchari albi, pulveris acaciæ, āā ʒij.; tinctur. lavandulæ comp. ʒj.; aquæ menthæ piper. ad ʒviij. M. Fiat mistura.

Of this he took an ounce three times a day.

Nov. 17th. The urine is clearer. Oysters to be taken as diet, and milk to be drank *ad libitum.*

Nov. 20th. The turpentine has been continued to this date with the best effects. The urine has acquired its healthy character, and the patient expresses himself as feeling quite well: he is allowed to get up, and, having no dislike to the mixture, continues to take it.

Nov. 23rd. The ecchymosed spots have disappeared generally, leaving merely a pale yellow hue, marking their outline, like that which succeeds on a common bruise. The turpentine was now stopped, and a few drops of the tincture of the muriate of iron, twice daily, prescribed in its place, with a compound rhubarb pill as an occasional aperient. Up to this date, there has been no return of the symptoms.

*Observations.* I have not much to say in comment on this case, although I do not doubt that it might form a text for a long and valuable disquisition. I shall only direct attention to three points:—

1. To the extended character of the local manifestations of the blood disorder, as indicated by the copious eruption, and by the free exuda-

tion of blood from the mucous membranes of the air passages, kidneys, and bladder.

2. To the cause of the diseased condition of the blood. Was it not the excessive smoking? For my part, I see no other cause. I believe that the fumes of tobacco, if long inhaled, possessing as they do narcotico-irritant properties, are quite as capable of reducing the consistency of the blood as some other agents of the same character; and that the essence of purpuric symptoms is a fluid or defibrinated condition of the blood.

3. The treatment of the case is a good illustration of the value of turpentine in purpura, and bears out Dr. Neligan's recommendations on this subject.—*Association Med. Journal, Feb.* 3, 1854, *p.* 110.

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## 19.—ON THE ABORTIVE TREATMENT OF SMALL-POX BY ZINC PLASTER.

By Prof. J. Hughes Bennett, Edinburgh.

[On a former occasion, Dr. Bennett called our attention to the good effects of mercurial plasters, thickened with starch, applied to the face in small-pox. Salivation was, however, occasionally produced, and it is questionable whether the mercury was essentially necessary.]

There is a close analogy between the mode of healing of wounds and ulcers, so well described by Dr. Macartney of Dublin—that is the so-called "modelling process"—and what takes place in the ectrotic treatment of small-pox. In the former cicatrices are far less liable to be produced than after healing by the first or second intention, and in the latter the pitting or cicatrization is prevented. The artificial plaster therefore takes the place of the natural scab or clot of blood, protects the parts below, and enables them to heal slowly but more perfectly than if exposed to the air uncovered and uncompressed by superjacent crusts. If this be the correct theory of the ectrotic treatment, the mercurial might be discarded, and any kind of plaster which would concrete on the face might be expected to produce the same beneficial result. This session I determined to try the effects of such a plaster, and after two or three failures have succeeded in procuring one that answers perfectly. The first case I treated with simple lard, thickened with starch and powdered charcoal, but it was so little coherent, that the patient, during the night, rubbed it off on her pillow or with her hands, and on her recovery she was pitted all over. In another case I tried carbonate of magnesia saturated with oil. But this also failed. In a third case, however, common calamine (*zinci carbonas*), saturated with olive oil (proposed by Mr. Bird, one of the clinical clerks), formed a coherent, tough crust, which remained on the face,

and was found to answer well. Three cases of natural small-pox have been since treated in this manner with the result, not only of preventing the pitting, but of diminishing the local and general symptoms, exactly in the same manner as I have formerly detailed, as being the effect of the mercurial plaster. The following is one of these cases :—

Alexander Ross, æt. 13, never been vaccinated, was seized with shivering on the 7th Jan., followed by the usual symptoms of fever. Entered the Infirmary on the 9th, when a few papules were observed on the face and arms. On the 12th the face was thickly covered with vesicles, which from their closeness would certainly have become confluent. The mask of calamine and oil was now applied. The disease ran its usual course, the eruption being confluent on the arms and trunk. Throughout the progress of the case the application of calamine saturated with oil preserved a firm and coherent crust, and was renewed from time to time. The patient experienced no smarting of the face, there was no swelling of the eyelids, no purulent discharge, or local unpleasant symptoms of any kind. The secondary fever was tolerably smart, delirium being present two days. On the 22nd the mask came off, leaving a clean smooth surface, free from all trace of pitting. Dismissed quite well on the 26th.

The following formula, after numerous trials, has been found to constitute the most efficient plaster:—Carbonate of zinc, three parts; oxide of zinc, one part; rubbed in a mortar with olive oil to a proper consistence.—*Monthly Journal of Med. Science, April* 1854, *p.* 301.

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20.—*Small-pox and Vaccinia.*—Mr. Richardson related the case of two children who had been vaccinated by matter obtained from the same source. In one, the vaccine vesicle went through the ordinary stages; in the other, small-pox, in a benign form, went through its entire course. He referred also to another case. Two children were vaccinated from the same points: one presented all the common appearances resulting from the process; in the other, small-pox appeared, and went through its usual stages. He mentioned these cases to show that medical practitioners might be occasionally blamed for performing imperfect vaccination, without any ground for such a charge.

[The above is interesting to the medical practitioner, as he frequently finds himself blamed by patients for vaccinating their children with what is called *bad matter*. We suspect, however, that the second case was not real small-pox, but *cow-pox*, more or less diffused over the body, and very much resembling mild small-pox. We have repeatedly noticed this in our own practice.]—*Lancet, March* 25, 1854, *p.* 337.

## DISEASES OF THE NERVOUS SYSTEM.

### 21.—PRACTICAL OBSERVATIONS ON THE CURE OF EPILEPSY.

By Dr. Joseph Williams.

[No specific has ever been found for epilepsy, and probably never will on account of the variety of causes from which the disease arises.

*Case.* Mr. P., aged 37, married. His first fit occurred on the 11th June, 1847, and for this and some succeeding fits he was bled, and put under antiphlogistic treatment by different practitioners. Afterwards he tried several physicians who prescribed a variety of remedies, but without relief. On the 2nd November, 1852, his condition is thus described:]

He is heavy, lethargic, depressed, and desponding, his eyes fixed on the ground; his spirits so weak that he can scarcely reply to the ordinary questions respecting his general health without sobbing. *His whole aspect is most discouraging, and he feels that he will not recover.* His temperament is lymphatic and bilious, yet with a very thick head of hair, and a somewhat projecting forehead; he complains of oppression and weight in the head. His neck is short, and for a man of his age he is decidedly stout, and at the same time leucophlegmatic; the tongue is slightly furred; the bowels are daily opened; the pulse is soft and small; his countenance is pale, bloated, and bilious; his urine is sometimes high-coloured, and stains his linen. He appears to me now to be inactive and indolent. His appetite is generally good, and he eats *meat* suppers, but his digestion is imperfect. He has never suffered from worms, but frequently with annoyed by itching of the nose, with a sense of weight at the posterior nares, and at the same time has considerable irritation about the rectum. He always becomes pale before the fits occur. Ordered mercurial pill, twelve grains; compound colocynth pill, half a drachm; extract of henbane, one scruple; to be divided into twelve pills, two to be taken occasionally at bedtime. Sulphate of zinc, twelve grains; extract of camomile, two scruples; divide into twelve pills; one to be taken twice a day. To take a dose of cotyledon umbilicus daily, immediately after the first fit. Whenever he looks particularly pale and feels the irritation in the nose and rectum, apply a mustard poultice to the nape of the neck, and administer an ounce of purified spirits of turpentine in half a pint of warm gruel, as an enema, to be retained as long as possible. Diet, meat once a day, with a proportion of green vegetable; no ham; no bacon; one pint of beer; cocoa and coffee; no tea. To walk one or two miles every morning, before or immediately after breakfast, and the same distance at least in the afternoon or evening. To pay great attention to the skin. He has never before been advised to take systematic exercise.

Dec. 9th. His countenance is brighter; he is less nervous; his head less oppressed; his appetite still good; and he digests his food better; he walks with greater ease, and begins to enjoy the exercise. The pills seem to give him vigour, and he feels stronger. His pulse is decidedly more firm; the tongue cleaner. Two days since, not feeling so well, with irritation about the nose and rectum, the turpentine enema was administered, and he "*soon felt warm all over, and decidedly relieved.*" He has *not* taken the cotyledon umbilicus, but as this was about the time for his usual attacks, I was particularly anxious, and therefore recommended him to take, every morning before breakfast, one teaspoonful of Hooper's fluid cotyledon umbilicus, and ordered sulphate of zinc, twenty-four grains; extract of camomiles, half a drachm; divide into twelve pills, one to be taken twice a day. To watch narrowly for the coldness of the nose; for the nasal and anal irritation; for the pale and livid countenance; and on the first approach of these symptoms, to rouse the system by the turpentine enema. In diet as before, with the same systematic exercise.

Jan. 11th, 1853. He has been taking his medicines regularly as prescribed; walks daily two or three miles before breakfast, and the same distance in the afternoon; has no attack whatever; has had recourse to the enema once since I last saw him. He complains of the expense of Hooper's cotyledon umbilicus. I believe he paid £1 4s. 6d. for the last medicines ordered by me! I therefore recommended him to go to Davenport's, in Great Russell-street, who has given great attention to the preparation of vegetable juices and extracts; and I at first ordered two drachms of extract of cotyledon umbilicus, divided into twenty-four pills, two to be taken daily before breakfast. But from a subsequent communication with Mr. Davenport, at the next visit, on the 2nd of February, I substituted for the pills the following: juice of the cotyledon umbilicus, a pound, as prepared by Davenport; a teaspoonful to be taken every day before breakfast, in a wine-glass of water; persisting, twice daily, with the zinc pills, and taking occasionally one or two of the aperient pills, not neglecting the turpentine injection.

June 13th. Since the last visit, I have seen Mr. P. several times, and the change is indeed most remarkable. He is active, happy, cheerful; his whiskers, before neglected, now well trimmed; his gait erect and firm; his eye intelligent; and, having had no attack since last October, he now considers himself cured. He has, however, not relaxed in regularly adhering to the prescribed rules up to this period, and has never allowed more than a fortnight to elapse without using the turpentine injection.

Nov. 21st. I have this day received a letter from him, stating that he is quite well, and wishing to know if he may leave off all remedial means. He has had no return whatever of the fits. He takes two of the aperient pills once a week; the cotyledon, one teaspoonful twice a week before breakfast, with a zinc pill on the same day.

He has only used the turpentine injection twice or three times since July.

Previously to being placed under my care, the fits had been gradually augmenting in number and severity; the paroxysmal attacks being o the most destructive and violent character, with suffocative respiration and horrible convulsions, continuing, with but slight intermissions, for six, fourteen, and even twenty-four hours; the disease evidently gaining ground, devastating his system, and shattering his intellect; absorbing five, six, and even seven days, to partially recover from the consequent prostration; his very memory and judgment being continuously impaired.

I was requested by some medical friends, in this, as in some other cases, to try the effects of one remedy at a time; but when a cure is actually progressing, I should do so with much reluctance. The cotyledon, for instance, given alone, often fails; but when coincidentally exhibited with zinc, succeeds, even when zinc, previously administered alone, had also failed, as instanced in this case. I would invite attention particularly to such points; also to the continuous and systematic use of large doses of the mineral acids, thereby altering the very character of the urine and the blood; recommending, also, in many cases, to try the full effects of producing a reflex action by stimulating the rectum.

Epilepsy does not depend upon one specific cause, and consequently no specific can ever be expected for its cure. A rational investigation must be made as to whether there is exalted sensibility or atonic lethargy; whether there is congestion or repletion; whether each organ regulates its function; and it is only by properly appreciating and by minutely attending to each symptom, that a cure can reasonably be expected.

This case is highly instructive. I would not place too much confidence in any one of the remedial means employed, but I would strongly refer to the sulphate of zinc, to the aperient with the mild mercurial, to the turpentine enema, to the nutritious but not over-stimulating diet, to the diminished evening meal, and to the systematic exercise. —*Lancet, Feb.* 4, 1854, *p.* 128.

[The following additional information on this subject, is given us by Dr. Williams in the subjoined case.

*Case.* A young man thought he had worms, and took a wine-glassful of spirits of turpentine. This was followed in due time by repeated attacks of epilepsy.]

He has been subjected to a great deal of prolonged treatment, both at home and abroad, and the nitrate of silver has been largely given, but without any benefit.

His exercise is irregular, at one time excessive, and then again neglected. He lives well, as most young gentlemen do who can command the luxuries of life. He is, however, to live by rule, and to take the exact amount of daily exercise prescribed by me; he is to

act gently on the bowels, with the following pill, and for the present to have two daily evacuations. Mercurial pill, one scruple; compound colocynth pill, two scruples; make into twelve pills, one to be taken occasionally, as may be necessary; and take of the juice of the cotyledon umbilicus (Davenport's), one teaspoonful daily before breakfast. Avoid stimulants, suppers, balls, theatres, &c., for the present; eat a *little less*, and take a proper proportion of vegetable diet.

[This treatment was soon of use. The dose was raised to two teaspoonfuls daily, with one aperient pill occasionally. The attacks seem to have been completely averted. After this Dr. Williams goes on to remark:]

When once epilepsy has occurred, an individual is more or less predisposed to its recurrence, and any physical or metaphysical excitement, not sufficient of itself to primarily produce the disease, may reinduce it, when it has been once developed. An interval of ten, fifteen, and even twenty years may occur, but then the attack may generally be clearly traced to some very obvious cause, or to some dietetic or hygienic error, as clearly shown in several cases which have come under my notice.

The prophylactic and curative effect of the cotyledon in this individual case must be taken as the exception rather than as the rule, and practitioners will be very much disappointed if they expect it to be uniformly successful. I have just received a letter from the country evidencing how useless it and all other remedies have hitherto proved in controlling the more severe paroxysms; still the cotyledon is a remedy which does undoubtedly occasionally effect a cure, and especially in the milder forms of epilepsy.—*Lancet, March* 25, 1854, *p.* 331.

[Dr. W. H. Ranking, of Norwich, does not at all agree with Dr. Williams in his faith in this medicine. He says:]

As far as my own experience goes, I should pronounce it utterly worthless. I have given Hooper's preparation, carefully and perseveringly, in more than thirty cases, public and private, in patients of all ages, and in not a single instance could I trace the smallest benefit to its operation. Many cases certainly were of an unmanageable character, and derived no benefit from any other medicine; but I have notes of three or four in which a most marked improvement has followed the use of the oxide of zinc in increasing doses, after several weeks had been, as I consider, wasted in the employment of cotyledon. —*Med. Times and Gazette, April* 1, 1854, *p.* 328.

[Mr. Hooper remarks on this subject, that many cases equally successful have been related to him; but he thinks Dr. Williams has evidently been misled about the comparative strength and value of the preparations of the drug. He says:]

When patients get better they mostly complain of the doctor, or give up the physic, or grumble grievously at paying for it. The last

was the case in this instance. The consequence was, that a preparation *professedly* cheaper than mine was prescribed. It invariably happens that if a chemist introduces an useful preparation, he is sure to be honoured by plenty of imitations, especially in the *cheap* way. All are of course prepared after Mr. So-and-so, when in point of fact all are as different as possible. The preparation of cotyledon umbilicus which Dr. Williams prescribed was *supposed* to cost considerably less than mine; whereas, if concentrated to the same extent, it would be just the reverse. The patient, however, was not quite straightforward in his representations to the doctor. He complained of the difference of price, but said nothing of the difference of quality; for whilst the preparation I supplied was thicker than treacle, of a dark green hue, and very highly concentrated, the lesser priced was as fluid as sherry, and of as light a colour. The druggist who sold it advertises the "solid and fluid extracts, and also the preserved juice, as recommended by Mr. Salter." I wrote to Mr. Salter on the subject, and in reply, he assured me that he knew nothing whatever of the party or of his preparations.

When I first gave my attention to the inspissated juice of cotyledon umbilicus, I sent to Mr. Salter the following minute:—Six pounds of the plant yielded two pints and a quarter of the fresh juice, and this was reduced by the process of inspissation to two ounces and six drachms. Mr. Salter in consequence published the doses thus:—Fresh juice, one ounce, twice daily; Hooper's inspissated juice, half a drachm twice daily. This appeared in the 'Medical Gazette' for March 2nd, 1849. It will be observed that the inspissated juice is sixteen times stronger than the fresh juice. I note this particularly; for upon its concentration, as well as on that of all analogous preparations, such as sarsaparilla, taraxacum, &c., the price must of *necessity* depend.—*Lancet, Feb.* 11, 1854, *p.* 176.

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## 22.—ON THE EFFICACY OF SMALL DOSES OF STRYCHNIA IN NEURALGIA, AGUE, DYSPEPSIA, &c.

By Dr. F. E. Wilkinson.

[Dr. Wilkinson corroborates Dr. Marshall Hall's statement of the value of strychnia, dissolved in acetic acid, in the treatment of epilepsy. He observes]

My method has been to dissolve two grains of strychnia in one ounce of phosphoric acid of the London Pharmacopœia—a very speedy and certain solvent, and also possessing, doubtless, the additional excellent property of assisting the good effect of the strychnia upon the brain and nervous system. Of this solution, in cases of prolonged dyspepsia, in neuralgia, indeed in many states of the nervous system requiring tone, it has been usual with me to administer, after the state of the secretions has been attended to, a dose, consisting of five minims

of the above solution, three or four times daily, either alone or combined with some other appropriate remedy, according to the nature and complication of the case. This medicine has also a remarkable effect in ague. During a four years' residence at Cambridge, I had opportunities of seeing the treatment of a vast number of cases of intermittent fever, but in no one instance, as far as my memory serves me, was recovery nearly so rapid as I have seen it after administration of this powerful remedy.

I have had early this year several cases of quotidian occurring among the poorer workmen of the crystal palace, who, during the wet weather, were in the habit of pursuing their labours at night, and in places where they were much exposed to the damp, and in all these cases the disease has succumbed to doses of strychnia, of about one-twenty-fifth to one-fiftieth of a grain, and this without the use of any other medicine, excepting a dose of calomel and opium, followed by a purge of compound jalap powder to commence the treatment of the case.

I cannot help being strongly of opinion that this medicine would be of extreme value in cholera, from the great power it has over the nervous system; more especially if combined with the sulphuric acid treatment, which has been recommended so frequently in the pages of 'The Lancet.' Nothing would be so likely to relieve as the combination of the astringent with the nervine tonic. I know that obstinate cases of serous diarrhœa, which resist almost every other remedy, yield to this combination; but I have had no opportunity of trying its effects in cholera, which I should, however, not fail to do, if, unfortunately, the disease again presented itself.

As a substitute for quinine, as a general tonic in most cases that present themselves, this solution of strychnia is to be recommended, as it does not produce the oppression and inconvenience that persons are liable to whilst taking quinine, but, on the contrary, generally produces a slight feeling of exhilaration which is not rapidly transient; at the same time, by improving the nervous tone, improving the state of the secretory apparatus.

I subjoin a few cases illustrating these remarks, whilst I know many friends who could readily corroborate these facts from cases occurring in their practices.

*Neuralgia.*—July 11, 1851. Mrs. P., married, aged thirty-two; pale and emaciated. She has been for some years the subject of neuralgia, which attacks her whenever she takes cold, and occasionally quite incapacitates her from attending to the duties of her family. She is now suffering acutely from pain and the loss of rest. The bowels being confined, the following was ordered:—Calomel, three grains; conserve of roses, sufficient quantity to make into a pill. Liquor of strychnia, (two grains to an ounce), twenty minims; sulphate of magnesia, one ounce; spearmint water, six ounces. To take one-fourth three times a day.

12th. The pain seems relieved this afternoon, but the patient is still suffering from loss of rest. To take belladonna, a quarter of a grain; extract of hyoscyamus, four grains: mix, and make into a pill.

13th. Slept well; feels better. The medicine has acted too freely upon the bowels.

14th. Is quite free from pain, but still a numbness exists in the old place. Continue the mixture.

15th. The pain has entirely left; feels more cheerful, and free from pain than she has done for many months; appetite improving.

From this time the patient continued free from pain, and gradually recovered a great amount of health and strength under the continued use of the above medicine, combined latterly with some tincture of iron.

*Case* 2., 1851. C. P. In this case the disease had been existing more or less constantly; the pain scarcely leaving her entirely for some months. Is now suffering from bilious diarrhœa. After prescribing a dose of calomel and opium, followed by a rhubarb purge to cleanse away irritating matter, I prescribed iodide of potassium, two grains; liquor of strychnia, five minims; water, one ounce; three times a day. After taking the medicine for some days, the pain entirely ceased. The treatment was continued for six weeks, and she has had no return of the symptoms for now nearly twelve months.

*In Ague cases.*—Jan. 5th, 1852. J. W. was taken ill yesterday, just before leaving work, with violent pain in the left side, and with uncontrollable shivering, followed by fever, with some amount of delirium, and then by profuse perspiration. Has not felt quite well for some time. Is suffering from the cold stage of intermittent at the present time; looks blue and pinched. Ordered calomel, three grains; Dover's powder, ten grains; to be made into a powder, and to be taken immediately. A compound jalap powder in the morning. Slept pretty well; medicine acted freely. Shivering returned in the morning. Altogether the patient does not think himself improved. Liquor of strychnia, forty minims; water, six ounces, to be made into a mixture, one-fourth to be taken every four hours.

7th. The time of accession of the paroxysm was later, and the attack less violent.

8th. Continues improving.

From this time the patient gradually improved, the dose of strychnia being gradually diminished, and on calling to see him on the 14th, he had returned to work, feeling himself quite well.

*Dyspepsia.*—J. S., aged thirty-five. Has been unwell for a length of time; has tried many things that have been prescribed for him, but without any benefit, and he believes very often with the reverse effect, and almost despairs of getting well. Has been under homœopathic treatment, but without advantage, and all the means he has used have been unsuccessful. Has dimness of sight; headache; un-

pleasant taste in the mouth in the morning; always sleepy; appetite capricious; sometimes feels hungry, but never enjoys his food; bowels at all times constipated; sleep at night disturbed. Prescribed a plain, simple diet, and to take the following medicine:—Liquor of strychnia, twenty minims; sulphate of magnesia, half an ounce; peppermint-water, six ounces: to be made into a mixture. One-fourth to be taken three times a day. Also, the following pill:—Mercury and chalk, three grains; powdered ipecacuanha, half a grain; extract of hyoscyamus, sufficient quantity to make into a pill.

The medicine having been taken for some days, and produced the desired effect upon the secretions, I prescribed liquor of strychnia, thirty minims; peppermint-water, half a pint: one-fourth to be taken three times a day: aloes, two grains; to be taken occasionally before dinner.

On seeing him three days after, he described himself as better in health and spirits than he had ever been before in his life; for the last two days he had been a different being; a load seemed removed.

A week after, he continued remarkably well, ate, drank, and slept well, and enjoyed his food and exercise. He did not wish to relinquish his medicine, as each dose seemed to relieve him.

From this time he went on well; but although now he has discontinued taking his medicine very nearly eighteen months, he still retains some by him, which he takes occasionally.

These are a few out of many cases giving an average sample of the beneficial effects of this medicine: I have a number of cases which have been thus treated, but cannot say that my legitimate confidence has been ever overthrown.—*Lancet, Dec.* 24, 1853, *p.* 601.

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## 23.—ON SLEEPLESSNESS, OR DISTURBED SLEEP, WITH ITS ATTENDANT SYMPTOMS, PALPITATION, LASSITUDE, LOSS OF APPETITE, &c.

By Dr. George Johnson.

[One of the chief causes of this state of the system is over-work, both of body and mind, but especially the latter. Everything must be done to warn the patient and enforce a more suitable arrangement of his labours; nevertheless, we should studiously avoid seriously alarming him, as this itself may increase the complaint. It must be a part of the duty of such patients to take a due proportion of daily exercise in the open air, and]

When all that is possible has been done for avoiding the causes of mental worry, and when all needful advice and encouragement have been given, we have next to direct our attention to the consequences, some of which will often continue long after their exciting cause has ceased to operate; while others are perpetuated by some persistent

and unavoidable source of anxiety. Now, the first and the most frequent consequence of over-work or anxiety—the one, too, which, more than any other, is productive of further mischief—is restlessness, or some form of disturbed and unrefreshing sleep. And the chief cure for this, after the cause has been as much as possible avoided, is an opiate at bed-time. So far as I can see, it is of little importance what preparation of opium or of morphia is used. For hospital patients I generally order the compound soap pill; one advantage of which is, that its name does not indicate its opiate nature. The dose must vary according to circumstances. In ordinary cases, five grains of the pill, *i.e.*, one grain of opium, may be taken every night at bed-time. In a case of much excitement, with extreme restlessness or a threatening of delirium, the dose must be double or treble that which I have mentioned. In such cases, however, the opium would be best given in a liquid state,—in the form of tincture, or the solution of the muriate or acetate of morphia.

The time for the continued exhibition of the opiate must vary according to circumstances, and will be much influenced by the success of the treatment. The object is to break the habit of dreaming restlessness, and to procure sound and refreshing sleep. In many cases this object may be attained by the nightly repetition of the dose for one week. It is seldom necessary or desirable to continue the medicine for more than a month, though in some cases it may be expedient and beneficial to extend the period considerably. In many cases I have found that the beneficial effects of the medicine have been immediate; the patient has slept soundly, the distressing dreams have ceased, the appetite has returned, and all the symptoms which depended on loss of sleep and loss of appetite have quickly disappeared. After a few nights of sound sleep have been procured by the opiate, the dose should be discontinued, and in most cases the patient will continue to sleep as well without the medicine as with it. There is, probably, no one medicine which has the power of quickly removing such a multitude and a variety of distressing symptoms as opium, when its action is really favourable, in the cases to which I refer. It is not, however, to any specific efficacy residing in the opium, but to the marvellous influence of sleep in refreshing both body and mind, that the benefit is really due. The value of the opiate consists in the fact, that, on the whole, it is the safest and most certain means of procuring sound sleep.

The use of opium as a medicine is sometimes attended with unpleasant consequences, and it does not always effect what is desired. I proceed now to indicate some of the unfavourable results of the opiate treatment, and the precautions which ought to be observed in the use of the medicine. One of the most frequent discomforts attending the use of opium is a feeling of nausea and faintness either with or without headache in the morning after awaking. The best cure for this is a cup of coffee or tea, with some solid food, followed by a walk

in the open air. In many cases the opium, although at first it may disagree, yet produces no unpleasant effect after the second or third dose.

The nervous patients who require the method of treatment which I am advocating, almost invariably suffer from constipation,—a torpid condition of the bowels being, in fact, one of the natural consequences of the general debility which characterises the patients in question. Although the immediate effect of the opium is to increase the constipation, yet its ultimate tendency is to restore the regular action of the bowels by means of the invigorating influence derivable from sound refreshing sleep, and an increased appetite for food. The temporary constipation may readily be obviated by an occasional mild aperient—a seidlitz powder, or a compound rhubarb or colocynth pill. The inconvenience arising from the astringent effect of opium upon the bowels is so easily met and removed, that it would never deter me from giving the medicine in any case which appeared to require it.

One of the most serious objections to the use of opium, is its tendency, in some cases, to produce an effect the direct opposite to that which we require,—to produce wakefulness and excitement, instead of sleep and composure. It is only in a small proportion of cases that this difficulty arises. It may sometimes be overcome by changing the form of the medicine, or by increasing the dose of the opium or morphia, and, in other cases, by combining the opiate with a moderate dose of antimony—James's powder, or tartar-emetic—a combination which has been strongly recommended by Dr. Graves, to procure sleep and check delirium in many cases of fever. It must, however, be admitted, that some patients cannot tolerate opium in any form or in any dose; and nothing can better show the value of this drug than the difficulty of finding a substitute for it. We may try henbane and hop, and these will sometimes effect our object; but their action is very uncertain in comparison with that of opium. (Since this lecture was delivered, I have found reason to believe, that one of the best substitutes for opium in the cases referred to, is chloroform, in doses of from ℥x. to ℥xx., made into a draught with mucilage.)

It is well to remember that an opiate enema will sometimes procure refreshing sleep when opium, in any form, administered by the mouth is either quite inoperative or productive only of distressing excitement or sickness.

But may not the frequent repetition of an opiate dose become a necessity for the patient? May we not be instrumental in making him an opium-eater? I admit that the danger of such an evil, if real, would be a very fearful one. There are few results of medical practice which I should regret more than the reflection, that I had in any way contributed to render a recourse to narcotics or stimulants habitual or necessary to a single patient. I believe, however, that a cautious use

of opium is attended with little danger of leading to so terrible an abuse of the drug.

In giving opium to hospital-patients, I never tell them what they are taking; and one reason for preferring the compound soap pill, in such cases, is, as I have before intimated, that the nature of the medicine is not apparent from the prescription, if the patient should read it. The opium should be discontinued as soon as it can be dispensed with,—as soon, that is, as restlessness and frightful dreams have ceased to harass and exhaust the patient. The rapid convalescence, and the renewed health, and strength, and spirits, which are wonderfully promoted by securing sound and refreshing sleep, will generally enable the patient at once, and without difficulty, to dispense with the use of opiates. I should withhold opium from a patient who neglects any directions which I have given him as to exercise, diet, and the general management of himself, and whose restlessness and nervousness appear to result from such negligence. In other words, I would not encourage a patient to trust habitually to opium for the removal of discomforts which might be avoided by the exercise of self-control, and by obedience to natural laws.

The cases in which the opiate treatment is most rapidly and completely successful are those in which the nervous symptoms are the result of some past grief, or anxiety, or fatigue, the impression of which remains, and is perpetuated by the patient's inability to obtain refreshing sleep. In such instances, a few nights of sound sleep, procured by means of the opium, rarely fails to effect a rapid cure, and this, too, after the nervous symptoms have continued for many months, or even for years. The first, third, and fifth cases, the particulars of which I gave in a former lecture, are good examples of the beneficial effects of the plan of treatment to which I refer.

Another class of cases in which equal benefit is often derived from a similar method of treatment, are those in which nervous restlessness has been induced by continued over-work, whether mental or bodily. In such instances, it is obviously desirable, as I have before intimated, that the patient should rest, or diminish his labours, if possible; but the patient may assure us that he has no alternative but to go on with his work, or to lose his employment, and with it his means of living. In such a case we may often prevent over-worked men and women from breaking down, and enable them to go on in comparative comfort by giving an opiate nightly for a week or two. Refreshing sleep will be induced, the appetite will return, and, as a consequence, the strength and appetite will revive. And the strength and spirits thus obtained are not false and artificial in the same pernicious way as the stimulus obtained from alcohol, by which too many are tempted in the circumstances to which I have referred. The temporary help which a languid body or mind derives from alcohol is generally followed by a corresponding amount of depression, and with this there comes a craving for a repetition of the stimulant. Another bad result of the

too free use of alcohol is a loss of appetite and an impaired power of digestion. Now, the effects of the opiate plan of treatment, conducted with the precautions to which I have before alluded, are in most respects the opposite of those produced by alcoholic stimulants; for we seek, by means of opium, a natural remedy for fatigue, that remedy being sleep, which brings with it a desire for food, and the power to digest it. Alcohol is taken for the sake of the immediate stimulus; the subsequent depression is the drawback upon its utility as a means of keeping up the working powers. The object in giving opium is to obtain, not its stimulant effects, which are comparatively slight and transient, nor immediately its composing influence, but the refreshment which follows the latter, and which has nothing corresponding with it among the ordinary consequences of alcoholic stimulants.

My objections to the *abuse* of alcohol as a stimulant do not of course apply to the use of wholesome wine and beer as articles of diet by those who require them, and who appear to derive benefit from them. Moreover, there are certain cases of nervous dssease in which some form of alcoholic stimulant may be given with great advantage, either alone or in conjunction with opium. I refer to cases of extreme restlessness, either with or without delirium, and whether resulting from intemperance or from grief, or watching or fatigue, when the bodily powers are very feeble, although under the mental influence there may be great excitement. In these cases, repeated large doses of opium sometimes fail to procure sleep, but appear rather to have a depressing influence: the patient's skin becomes cold and is bathed in perspiration, while the delirium and excitement continue. In such circumstances, the continued use of the opium is not only useless, but injurious and dangerous, and the surest mode of arresting the collapse, and of procuring sleep, is to give freely either wine or brandy, or, in cases of intemperance, the stimulant to which the patient has been accustomed, with beef-tea or some other form of nourishment.

It is scarcely necessary to observe, that in all cases of nervous disease we must carefully watch the signs of functional disturbance or of structural change in any organ of the body, and that we must meet such symptoms by the appropriate remedies. And although, in most instances, a tonic plan of treatment is required, yet we must not hesitate to resort to measures of depletion if they are called for by the occurrence of such organic disease as appears to need this treatment.

The cases which are least favourable either for the opiate or for any other plan of treatment, are:—1st, cases of confirmed hypochondriasis or melancholy of very long duration, and especially when these have the character of religious despondency; 2ndly, cases in which extreme nervousness has resulted from great terror, or from a sudden shock which has left a deep and durable impression upon the mind and nervous system; and, lastly, cases in which the symptoms are perpetuated by some constant source of anxiety and sorrow.

These classes of cases, although very unfavourable, and often little benefited by any plan of treatment, whether medical or moral, are yet by no means hopeless nor always incurable. Their unfavourable and unmanageable character is, however, greatly confirmed when they are complicated with epilepsy; and this whether the epilepsy has been induced by a sudden shock of grief or terror, or whether it has supervened upon long-continued anxiety and nervousness.—*Medical Times and Gazette, Oct.* 22, 1853, *p.* 415.

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24.—*On the Diagnosis of Cerebral Diseases.* By Dr. Robert Hunter Semple.—[The following is a summary of the chief points of diagnostic importance respecting diseases affecting the skull and the cerebral membranes:]

1. When a person suffers from constant and dull pain in the head, with or without convulsions, the pain being limited to a certain region, the external surface of the head being cool and the pulse regular, the digestive system not much or not at all disturbed, and the intellect unimpaired; if any thickening of the bony structure can be perceived, or if the patient has suffered from syphilis, it may be conjectured as probable that there is thickening of the skull, and that the symptoms are due to that cause. In such a case, a moderate diet should be enjoined; leeches may be occasionally employed; the bowels should be kept gently open; but I think our chief reliance should be upon the internal administration of iodide of potassium in increasing doses, and continued for a long period.

2. When there is pain and heat of the head, *vomiting*, nausea, want of appetite, foul tongue, derangement of bowels, rapid and full pulse, squinting, delirium, thirst, and subsequent coma, and if the blood drawn be buffed and cupped, there can be little doubt that the case is one of meningeal inflammation. In such a case, there is no time to be lost; the warm bath must be used in the case of a child; cold must in all cases be applied to the head; leeches are always necessary; calomel is to be freely administered, and alterative aperients must be given at the same time. By the adoption of such measures many valuable lives may be saved.

3. When the head is cool, the pulse moderate, the tongue clean, the motions healthy, *then*, although there may be the most violent and long continued convulsions, squinting, drawing in of the thumbs towards the palms of the hands, and all other symptoms indicating deranged action of the nervous centres, there is nevertheless an absence of serious centric disease. We may here reasonably hope for a favourable termination by the use of ordinary hygienic means; such as lancing the gums, if the patient be undergoing the process of dentition; attending to the quality of the breast-milk in very young infants; correcting any acescences in the primæ viæ; change of air,

and the judicious use of stimulants and tonics; and the adoption of all such other means as are calculated to improve the powers of the system in general.

It cannot be urged in too strong terms, that the mere existence of convulsions, however alarming they may appear, does not indicate, *alone*, a serious disease of the brain; these movements are merely the external manifestations of cerebral irritation, and are often caused by circumstances comparatively trivial. On the other hand, it must be remembered that, at all periods of life, the cerebral membranes, especially the pia mater, are apt to take on inflammatory action; and that, slight and web-like as this membrane is, and insignificant in appearance as are the lesions which it exhibits to the scalpel or to the microscope, yet upon its integrity or its unsoundness often depends the brightness, the perversion, or the obscurity of the intellect; and that an inflammatory disease of its texture is one of the most frequent causes of death. The most energetic treatment often fails to rescue the patient from the grave; but it is nevertheless of paramount importance to detect the malady during life, and, if possible, to arrest its progress.—*Association Med. Journal, Dec.* 2, 1853, *p.* 1055.

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## 25.—ON THE ORIGIN AND CIRCULATION OF THE NERVOUS INFLUENCE.

By Dr. John M. Strachan.

[In spite of all the talent displayed in the investigation, it is undecided whether the nervous influence is identical with galvanic electricity or not. We should first decide whence this influence is derived. Some say it is generated in the brain and nervous masses, and distributed by the nerves; but the fact is, that there is scarcely any tissue less likely to originate electricity than the substance of which these nervous masses consists. Dr. Strachan suggests the idea that it is produced by the chemical action which is constantly going on in the change of arterial into venous blood. He observes:]

In every chemical action galvanic electricity is evolved; a large amount must therefore be produced in the animal system by the change of arterial into venous blood. The following is a condensed view of what is now generally admitted to be the nature of the change referred to. The blood after being exposed to the influence of the atmospheric air in the lungs, acquires a large amount of oxygen, so that the iron which it contains exists in the highest state of oxygenation as the peroxide. On reaching the capillaries, the peroxide of iron comes in contact with carbon, which attracts a portion of the oxygen; by this the peroxide is reduced to the state of protoxide of iron, and the carbon is converted into carbonic acid. The protoxide of iron and the carbonic acid, thus produced, immediately unite, forming the carbonate of iron.

It is quite clear that by these combinations galvanic electricity must be produced in great abundance; and as iron does not enter into the composition of any of the tissues or secretions of the body, it is probable that the production of electricity is the only purpose of this mineral existing in the blood in such quantity.

The chemical changes referred to are effected in the vessels situated between the termination of the arteries and the commencement of the veins. Now it is demonstrable that wherever arteries terminate and veins begin, there also are nerves distributed, and as these consist of afferent and efferent fibrils, which have been proved to be conductors of electricity, we have only to suppose that the galvanism set free by the chemical action is taken up by the afferent nerves, and passing through the nervous centres, is returned by the efferent nerves to the same point, and thus a continued electric circuit is established, every modification of which must promote or retard the chemical change, and so influence the circulation of the blood; and, on the other hand, changes in the circulation of the blood must have a powerful influence in modifying the electric current. There is thus a constant circulation of nervous fluid dependent upon the circulation of the blood; and just as the heart does not generate, but only distributes the blood, so the brain and the other nervous centres do not produce, but serve to accumulate, modify, and distribute the nervous influence.

This constant circulation of nervous fluid, in union with the circulation of the blood, is sufficient to give us an idea of organic life; and, perhaps, in some of the lower forms of animals this is all that exists. But as we rise in the scale of organization, the animal system becomes a much more complicated machine, having a variety of functions. It is therefore necessary to inquire how these may be performed.

The experiments of various inquirers have rendered it probable that there are distinct nervous centres, and that to each of these belongs its own separate function. It is probable that these functions are performed, not as has generally been explained, by electric shocks communicated *from* or transmitted *to* the central organs, but by sustained and constant circuits of electricity produced by the changes of the blood in the capillaries, and by the modification of these currents by external or internal agencies.

On the supposition that the different nervous centres have separate functions, and that they all receive their electricity from the chemical changes of the blood, there comes the question whether each central organ has a completely distinct set of nerves, and that thus there are distinct nervous extremities, as well as distinct centres, for each function; or whether there is only one afferent and one efferent fibril accompanying each capillary of the arteries and veins, which, receiving the electricity, conveys it to the nearest ganglion, from whence it is partly returned to the same point, thus maintaining the life of the part; but that a portion of the electricity is transmitted along other nerves to the more distant central organs, thus forming a longer circuit of motion or sensation.

It seems to be an universally received opinion that sensation results from impressions transmitted by the nerves to the central organ; that motion on the other hand, arises from an influence sent from the central organ to the extremities of the nerves, thus conveying the idea that these centres are more sentient and more capable of originating motion than the other parts of the nervous system. This idea of impressions being conveyed to and from the brain is contrary to our consciousness, and this should be a powerful reason for doubting its truth. When I prick my finger, I am not conscious of any impression being transmitted to the brain; on the contrary, I perceive the impression in the finger, and only there. Why then, should we suppose that we are conscious only of impressions that are conveyed to the brain? It is true that any obstruction in the nerves connecting the external organs with the brain destroys sensation or motion. But this only shows that, for these functions to be performed, it is necessary that the electric circuit should be uninterrupted. The mind, however, is as likely to perceive any modification of that circuit at the point where it occurs, as at the distant central organ. And in the same way motion may arise from some change effected at the extremities of the nerves, and not from an influence transmitted from the brain.

Regarding those operations which are considered as mental, I would merely hazard a conjecture—namely, that the large development of the cerebrum should not be considered as a central organ, but as a development of peripheral nerves receiving electricity from the capillaries of the blood-vessels of the brain, and that these nerves have their centre in the commissures. This organ, which thus consists entirely of nerves and blood-vessels, may be, in accordance with general opinion, the seat of mental operations.

If it were established that there is a constant circulation of the nervous fluid, such as has been described, it would render our conceptions of the nervous system as clear as those we possess of the circulation of the blood. The principle which governs it is the same as that of the galvanic battery, or a more apt illustration would be the electric telegraph, with its electricity conveyed by the positive and returned by the negative wire; and to carry out the comparison, the different nervous centres may be considered as so many telegraphic stations. There is this difference, however, that, instead of successive sparks of electricity, we have a sustained and continuous current, and consequently a provision in the circulation of the blood for keeping up a supply of the chemical ingredients necessary to maintain the stream.

If it were established that the circulation of nervous fluid is kept up in the manner described, it would improve our knowledge of the circulation of the blood, by showing a purpose effected by it even more important than the nourishment of the tissues; and we should then clearly understand the use of the oxygenation of the blood by respiration to be, the restoration to that fluid of the power of imparting electricity.—*Lancet, Feb.* 25, 1854, *p.* 210.

26.—*Hysterical Chorea treated by the Syrup of the Iodide of Zinc.* Under the care of Dr. Barlow, at Guy's Hospital.—[In this case, the nervous derangement, depending on an uterine cause, took all the appearance of a case of chorea. The patient was 16 years old, of a peculiar masculine appearance. The catamenia had appeared about three months, and the choreic symptoms about five days before admission.]

On her admission, the patient presented a very excited condition; her arms were in constant motion, also the legs to a certain extent; the muscles of the face were likewise very much affected, contorting the face in a hideous manner. The tongue was remarkably enlarged, and the head very hot. Dr. Barlow thought that there was a mixture of hysteria and chorea in the case, and he prescribed decoction of aloes with tincture of valerian.

4th day. The patient does not appear better; a blister was ordered to be applied to the nape of the neck. She was desired to go on with the mixture.

9th day. Much the same; the bowels being confined, colocynth and calomel were ordered.

13th day. She is better to-day; her speech, which was very much affected, is now more natural. She takes the iodide of zinc (half drachm doses of the syrup) and calomel night and morning.

17th day. Improving; there is not so much inordinate muscular action; the tongue remains very much enlarged, and she complains of sore mouth, probably from the calomel. Go on with the syrup.

21st day. Has greatly improved under the use of the iodide of zinc; the girl is now able to feed herself; and on the 25th day she took her dinner at the general table with the other patients. She had then improved considerably, and walked very well. Dr. Barlow desired her to go on with the syrup of iodide of zinc in mint water, and to take half an ounce of decoction of aloes every morning.

This patient progressed very favourably for the next few weeks, with the exception of a feverish attack, during which the zinc was for a few days omitted, and she left the hospital June 28th, 1853, twelve weeks after admission, all the symptoms above related having completely disappeared.—*Lancet, Dec.* 31, 1853, *p.* 624.

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## 27.—TETANIC SPASM TREATED BY CHLOROFORM.

By William Harding, Esq.

[Is there to be no antidote found for tetanus? The remedies—tobacco and opium—were the chief ones formerly employed. Tobacco is the most effective relaxer of muscular fibre perhaps, but it often occasions extreme and alarming prostration. Opium is sometimes, no doubt, of great apparent good; though the explanation of these good effects is

not satisfactory. It is, perhaps, to the class of anæsthetics that we may look with the greatest hope of success. The effects of chloroform are here well described:]

Chloroform annihilates pain, it produces complete relaxation of the voluntary muscles. To effect the latter object, the stupor must sometimes be deep, as during its administration, at the commencement of the transition period, muscular excitement is occasionally developed; it is, however, very transient, and but the sure forerunner of a stupor that carries with it a perfect condition of muscular relaxation, in which the fibre becomes soft, flaccid, and helpless. Under this condition, difficult dislocations have been with facility reduced, the taxis has been more successfully employed in hernia, and the old-fashioned and objectionable helpmates to physical force,—viz., bleeding, tobacco, antimony, &c.—have been almost banished from practice.

Patients have been kept over and over again for hours under the influence of chloroform, without injury, and almost without any after discomfort. We are accustomed to look at intoxication occasioned by fermented liquors without the slightest anxiety, and to see it continued for days without alarm, though probably the effect of chloroform is less dangerous, and the after effects certainly far less distressing. Having said thus much in favour of chloroform, I append a case of some interest in illustration.

The wife of a gentleman, residing some five miles from town, being by chance alone in the house, towards the dusk of the evening, was greatly terrified, on entering the garden, by a supposed burglar, who had effected his entrance by scaling the wall, and was then at the bottom of the ground; a consciousness of the helplessness of her situation struck her with extra fear, she screamed, retreated into the house, felt faint and greatly agitated, and recovered but very little during the course of the evening; the five following days she continued in a very nervous and agitated state; there was a sense of tightness about the larynx; an uneasiness and stiffness about the jaws and throat; the tongue appeared awkward, and as though it were too large for the mouth; she could swallow fluids readily, but always with a sensation of some obstruction, that it required an extra effort to overcome; the sleep was agitated, and accompanied by perspiration in excess. On the afternoon of the sixth day she reposed on the sofa and slept, the mind re-enacted the scene of the first day—magnifying events—and she awoke under the impression of being strangled, and having experienced during sleep that sensation. She was pale, agitated, profusely bathed in perspiration, and the jaws were immovably fixed. This state of trismus continued unrelieved for six weeks, during which time she was kept alive by beef-tea, wine, and other fluids poured through the teeth. At the commencement of the attack she was subjected to medical treatment, which was perseveringly continued for three weeks without success; she then passed into the hands of a mesmeric physician, and was subjected daily, for a fortnight, to its manipulations.

She never, however, came under the mesmeric influence; being without faith and without fear she supposed herself to be a bad subject for it. At the end of the sixth week I visited the case, and at once proposed to endeavour to open the jaw by the influence or power of chloroform. This was agreed to, and on the following day, accompanied by my friend Dr. Taylor, proceeded to the operation. The patient was readily brought under the influence of chloroform, and we were enabled, after some trouble, to get the mouth open a very little. At first the stiffness and rigidity were with some difficulty overcome, but as the influence of the chloroform continued, and the stupor became deeper, we were able by the assistance of a lever between the teeth to open the jaw to a sufficient extent. We now kept up a little action by opening and shutting the mouth, and finally placing an instrument prepared for the occasion between the teeth, allowed the patient quietly to return to consciousness. The operation, to our satisfaction, was quite successful; there remained not exactly a stiffness, but rather a complete want of power in the jaw. By generous diet, a moderate use of wine, quinine, and iron, &c., the health and strength of the patient have very much improved. It is now three weeks since the administration; the power of the jaw is not very great, but it has steadily and progressively returned.

I think this case a very fair example of the cure of chronic trismus —the mildest form of tetanic spasm—by the direct intervention of an antidote, of a remedy producing a diametrically opposite effect to that of the disease, and without wishing to be extravagantly hopeful, I will venture, in conclusion, to say, that chloroform has the power of relaxing the voluntary muscles; that opium arrests the nervous influence that excites in the muscle its property of contraction, and that these are the indications to be fulfilled in the cure of tetanus, both in its acute and chronic form, whether confined to few or many muscles, and there is good and sufficient reason to believe that tetanus is a disease that will ultimately prove more amenable to treatment.—*Lancet*, *Dec.* 10, 1853, *p.* 546.

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## 28.—USE OF CHLOROFORM INHALATIONS IN THE TREATMENT OF CERTAIN CLASSES OF SPASM.

By Dr. Russell Reynolds.

[These cases are related merely to show the therapeutical value of chloroform in certain groups of symptoms of a spasmodic character. The first case is one of *Asthma* in a young lady, aged 20, who had suffered from this disease for six or seven years. Many forms of treatment had been followed, but]

The attacks, increased in severity, and were readily induced by changes in the weather, &c. The day before I saw her an attack commenced; throughout the night she had been in a state of

orthopnœa, and epistaxis had occurred three times. The face was much swollen; the eyes scarcely visible; the dyspnœa and general distress were urgent; but there were no physical signs of disease to account for the symptoms.

Chloroform was administered in the following manner:—Twenty drops were placed upon the handkerchief, and inhaled from the distance of a few inches. As soon as the odour had disappeared the same quantity was re-applied, and the inhalation maintained for ten minutes consecutively, repeating the twenty drops when necessary. Care was taken during the whole process that no stupefaction should occur. If any sign of such result presented itself, the handkerchief was withdrawn for two or three seconds. The inhalations were repeated every four hours. Little or no relief followed the first; but it was perceptible after the second, and gradually increased with each repetition until the noon of the following day, when, as she was absolutely free from dyspnœa, the inhalations were discontinued. The swelling of the face disappeared entirely, and there was no return of epistaxis. On the morning of the third day there was some slight return of dyspnœa, but it was immediately checked by one inhalation.

It is now nearly two years since the first use of chloroform in this case; and upon several occasions during that period an attack has been threatened, but has been at once averted by the inhalation of a few drops in the manner described above. The patient is apparently cured of her troublesome disease, or at least she has the means of relieving its most painful suffering.

Two cases, in persons of much more advanced age, have been treated in the same manner, and in each of them there has been similar success. In one the symptoms disappeared after three or four inhalations; and in the other the relief, though less rapid, was equally complete.

Esther K., aged 38, had for ten years suffered from painful rigidity of the right lower extremity. She states that it commenced in the thigh, and gradually extended to the leg, completely preventing all use of the limb. The right arm was occasionally affected in the same manner, and during the four or five weeks before my seeing the case the left side had become rigid in the same manner as the right. The patient described herself as suffering much pain in the limbs themselves, and still more in the lower dorsal and lumbar regions. She had been subjected to all the formidable array of counter-irritants, which are supposed to frighten such maladies away, and her spinal region bears the marks of numerous moxas, cuppings, &c. For several years she had been confined almost entirely to her bed, occasionally trying to move about with crutches, but never having been able to adopt the sitting posture, owing to the rigidity of the limbs. She lay perfectly flat upon the bed, and rigid as a board, from the occiput to the heels. Upon our attempting to raise the latter, she moved as if she was all in one piece. The greatest force which it was thought safe to exert was

employed in vain to bend either the ankle, knee, or thigh. The legs were adducted forcibly, so that the knees were pressed together, the right being rather in advance of and higher than the left. It was thought that the right leg, from its long continuance in this posture, must have become fixed, and that it was hopeless to make much attempt for its improvement. However, partly for the sake of its examination, and partly for the purpose of diagnosis, (as there was some supposition of exaggeration on her part,) it appeared to me desirable to remove consciousness and volition, and to accomplish this I suggested the use of chloroform. It was accordingly inhaled, and we were somewhat surprised to find that both limbs became perfectly flaccid, and could be moved at pleasure into any position that we choose. When the limbs were in this perfectly relaxed condition, reflex actions were readily obtained by the application of a heated plate to the soles of the feet. As consciousness returned, the spasm recommenced, and it did so before it could be asserted that distinct volition was exercised. The patient made inarticulate sounds upon being pinched; but could not, or at all events did not, make any attempt to answer questions, or to change the position of the limb. A second quantity of chloroform was then given, sufficient to relax the muscles, and the legs were placed in such a position that extension could not take place. Chloroform has not been inhaled again, as from some cause the muscular rigidity has not returned to anything like the same extent, and the patient now moves about with the aid of a crutch. There is some loss of power in both legs, and loss of sensation in the right, but there is no spasm. To the present state of the patient and its diagnosis it is not my intention to refer. The only point to which I wish to direct attention is the effect of chloroform upon tonic spasm of such prolonged duration.

My friend Mr. Squire had under his care a most obstinate case of "*Hysterical knee.*" The leg had been kept at an acute angle for five years, and had resisted all attempts at extension. It was thought, from the firmness with which it retained this position, that at least ligamentous anchylosis must have taken place. The inhalation of chloroform proved, however, that such was not the case; for when consciousness and volition were in abeyance, the joint became perfectly flaccid and the leg could be extended completely.

From these and some other cases, I am disposed to think that chloroform may be of much service in the examination, diagnosis, and relief of certain forms of spasm. It is a great assistance, sometimes, to remove volition, sensation, idea, and emotion from the field of investigation. Some spasms appear to be placed in curious relation with one or all of these centres of motor impulse, and to be, to a certain extent, dependent upon them. It is, perhaps, more probable that volition itself is in a morbid state, than that any intentional deception is practised. Ideas, as well as muscular movements, may be grouped abnormally. Sensations and emotions, in their exaggerated form, may be

as real (so far as the patient, as a moral being, is concerned) as in any other case; for the absolute force of their external cause is but one of many concurring influences for the regulation of their intensity. There is a tendency to the grouping of muscular contractions; and by their frequent association, habits (of physiologic and pathologic character) are formed. It may be that, in the breaking of these habits, chloroform will prove of service.

The inhalation of an anæsthetic agent can do little more than relieve the symptoms, when there is, under-lying them, some organic disease; but in other cases, where the concatenation of such phenomena constitutes the whole disease, (or the whole which we are able yet to recognise), it is possible that much more may be accomplished. For whilst in the former class we can only prevent some of the effects of morbid processes, which are themselves beyond our reach, in the latter class we may remove the whole. Pathology has not yet advanced to the perfect discrimination of these two classes of disease; but there are grounds for hope that by the discovery and careful application of some experimental processes we may be able to place the phenomena of nervous disorders among the class of objective symptoms. Were this accomplished, we should have the same kind, and perhaps eventually the same degree of certainty, in their diagnosis, that we have now with regard to diseases of the chest.—*Lancet, Oct.* 29, 1853, *p.* 411.

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## 29.—ON TETANUS FOLLOWING LESIONS OF THE UTERUS, ABORTION, AND PARTURITION.

By Prof. J. Y. Simpson, Edinburgh.

Dr. Robert Reid, in his work 'On the Nature and Treatment of Tetanus, &c.,' states that "injuries or derangements of *internal organs* do not appear to have much tendency to produce this affection. Indeed (he adds), I have not been able as yet to find any case recorded of true tetanus which arose from *internal injury*, whether in the alimentary canal or elsewhere."

[From a series of twenty-four cases, Dr. Simpson proves that traumatic tetanus does occasionally supervene as a secondary obstetrical disease. He then enters upon the]

*Nature of Puerperal Tetanus.*—It will be granted, I believe, by all pathologists that the existence of an injury or wound upon the external parts of the body is by far the most common cause of tetanus. After abortion and parturition we have the existence, upon the interior of the uterus, of a similar state of lesion. All authorities seem now generally agreed as to the facts (1) that the human decidua is, as was maintained in the last century by Krummacher, the thickened and hypertrophied mucous membrane of the uterus, (2) that the epithelial or superficial layer of it separates from its basement or

outer layer in abortion and after delivery—and (3) that this separation or solution of continuity of tissue, as well as the rupture of the organic attachments of the placenta from the uterus, leaves the interior of this organ so far in the condition of an external wound, or with a new or raw surface for the time being exposed. Obstetrical tetanus has, in this respect, an exciting cause essentially similar to surgical tetanus. And perhaps the great reason why this state of lesion of the interior of the uterus does not more frequently give rise to tetanus is simply this, that the uterus is itself principally, or indeed almost entirely, supplied by nerves from the sympathetic system, while apparently, as stated by Mr. Curling and other pathologists, tetanus is an affection far more easily excited by lesions of parts supplied by nerves from the cerebro-spinal system, than by lesions of parts supplied by nerves from the sympathetic system.

Tetanus is known to follow wounds very various in their degree and severity. "Whether (says Professor Wood) the wound is trifling or severe seems to be of little consequence," as far as regards the supervention of secondary tetanus. By what pathological mechanism a wound or lesion of a part can, under any circumstances, lead on to an attack of tetanic disease, is an inquiry regarding which we as yet possess little information; and in this respect, the production of obstetrical tetanus is not more obscure than the production of surgical tetanus.

The disease, when developed, essentially consists of an exalted or superexcited state of the reflex spinal system, or of some segment or portion of that system. What circumstances in midwifery or surgery might possibly, whether single or in combination, produce this state, and so produce traumatic tetanus? In relation to this question I will venture to make one or two hypothetical remarks.

1. We have in obstetric pathology evidence almost amounting to certainty that the analogous superexcitable state of the cerebro-spinal system of nerves which gives rise to eclampsia or puerperal convulsions is generally produced by the existence of a morbid poison in the blood. And it seems not impossible that the generation of a special blood poison, at the site of the wound or elsewhere, may sometimes in the same way give rise to obstetrical and surgical tetanus. We know, indeed, that the introduction into the blood of particular vegetable poisons, is capable of exciting an artificial disease quite analogous to tetanus. Brucine and strychnine have both of them, as is well known, this effect. Abundant experiments upon the lower animals, and cases of poisoning in the human body have amply proved this. Tetanus is a frequent disease from wounds, &c., in the horse and lower animals. Would it not, in relation to the possible humoral origin of the disease, be worthy of trial whether the blood of an animal dying of tetanus is ever capable by transfusion of infecting another animal with the same malady? The experiment is said to have succeeded with a disease having many analogies with tetanus, viz., hydrophobia. But,

2. We know further, with regard to the tetanizing effects of strychnine and brucine, that these agents do not necessarily require to circulate in the blood in order to produce their special effects. In the lower animals, when strychnine or brucine is applied directly in the spinal cord, tetanic effects instantly follow; and in all probability, when they are introduced into the blood, they produce their tetanizing consequences, by being carried in the current of the circulation to the cord—thus texicologically influencing it, as if they were primarily applied to it. Centric irritation, or centric morbid conditions of the cord (and, it may be, of the cerebro-spinal system), may lead on, according to these experiments, to tetanic disease, independently of any morbid state of the blood. And, if the observations of Sims, Harrison, and others, are correct as to the occasional mechanical origin of *Trismus Nascentium* from pressure and displacement of the occiput upon the medulla oblongata, we have, in this obstetrical instance, tetanus resulting,—as it certainly sometimes does under other circumstances,—from direct injuries, or affections of the nervous centres.

3. The appropriate and specific affection of the spinal cord, or cerebro-spinal system, constituting traumatic tetanus, would appear to be sometimes, if not always, a condition excited by some influence propagated upwards along the nerves, from the seat of the injury or wound to the central portions of the nervous system. In proof of this, we have the fact that occasionally (as in cases published by Hicks, Murray, Larrey, &c.,) but not often, the artificial division of the nervous communication between the seat of the wound and the nervous centres has arrested the disease, when performed in a very early stage of the attack. What the nature of the transmitted influence may be, we have no reason at present of judging. But we have analogies for the transmission itself in some of the phenomena of electrical induction and propagation. And, let me further add, that the symptoms of tetanus assimilate themselves very greatly to a rapid succession of electrical or galvanic currents transmitted peripherally from a nervous trunk or centre to the sets of muscles affected.

At the present time various physiologists are busy with recondite inquiries into the laws pertaining to the electro-motive powers of the nervous and muscular systems of the body. When our knowledge of these laws is more advanced, physicians will, perhaps, be able to deduce from them a truer and juster pathology of tetanus and other convulsive diseases.

*Treatment of Puerperal Tetanus.*—According to Mr. Curling, tetanus is not only less frequent in women than in men, but it is also "*less fatal* in the female than in the male sex."

Out, however, of the preceding list of twenty-four cases of obstetrical tetanus, only three recovered, and these under opposite modes of management. There are two other cases on record of the successful termination of puerperal tetanus. The two instances I allude to have

been reported by Dr. Symonds and Dr. Currie. The true tetanic character of both cases may perhaps admit of some doubt.

In obstetrical tetanus, no kind of local treatment to the seat of the original uterine lesion could be well applied, or would probably be of any avail, if applied. And, as to *constitutional* means, perhaps the most important are,—

1st. The greatest possible quietude and isolation of the patient from all irritation, corporeal or mental, during the course, and for some time even after the resolution of the disease.

2nd. The special avoidance of painful and generally impracticable attempts at opening the mouth in order to swallow; but sustaining the strength of the patient, and allaying thirst by enemata, or by fluids applied to the general surface of the body.

3rd. If there is any well-grounded hope of irritating matters lodged in the bowels, acting as an exciting or aggravating cause, to sweep out the intestinal canal at the commencement of the disease with an appropriate enema.

4th. To relax the tonic spasms of the affected muscles, and diminish the exalted reflex excitability of the spinal system by sedatives, or antispasmodics; with the prospect of either directly subduing this morbid reflex excitability; or of warding off the immediate dangers of the disease, and allowing the case to pass on, from an acute and dangerous attack, to a sub-acute, and far more hopeful and tractable form of the malady.

Various sedatives and antispasmodics have been recommended to fulfil this last most vital and important indication in the treatment of tetanus—as belladonna, stramonium, hemlock, henbane, musk, camphor, Indian hemp, hydrocyanic acid, valerian, camphor, &c. Perhaps the two drugs of this class that have hitherto been most used, and relied upon, are opium by the mouth, and tobacco by enema. But certainly we have no decided evidence of the beneficial effects of opium, even in the most heroic doses; and it seems doubtful even if this and other such medicines are readily or at all absorbed from the stomach and upper part of the intestinal canal in cases of acute tetanus. Tobacco in the form of enema has doubtlessly often acted most favourably in arresting the spasms; but it is a drug the action of which is not easily or safely kept up with that degree of constancy which is required in acute tetanus. Latterly the antispasmodic action of sulphuric ether and chloroform has been repeatedly employed to allay that exalted state of the reflex nervous system, and to relax that resulting tonic contraction of the maxillary and other muscles, which constitute the essence of tetanus. Medical men may yet discover therapeutic agents (to be introduced into the body by inhalations or otherwise), the action of which will be as directly anti-tetanic in their effects, as strychnine is directly tetanic in its properties; and such agents—if they were otherwise innocuous—would form the proper remedies for tetanus. Here, as elsewhere, in future medicine

physicians will probably seek for therapeutic remedies in the same way, and upon the same principles, as toxicologists search for antidotes to poisons. Chloroform in sufficient doses acts as a direct sedative upon the reflex nervous system, and upon exalted muscular contractility. In consequence of this action, it affords us one of our surest and most manageable means of allaying common convulsive attacks; and it has now also, according to the reports in periodical medical literature, been repeatedly successful in the treatment of traumatic tetanus, whilst it has apparently also repeatedly failed in subduing the more acute forms of the disease. Perhaps some of the failures have arisen from the patient not being kept sufficiently deeply and continuously under the action of the drug. If used in tetanus its action will require to be sustained for many hours, or oftener perhaps for many days. And there is abundant proof of the safety with which its continuous action may be kept up under proper care and watching. For instance, a few months ago I saw, with Dr. Combe, a case of convulsions of the most severe and apparently hopeless kind in an infant of six weeks. The disease at once yielded, and ultimately altogether disappeared under the action of chloroform, which required to be used almost continuously for thirteen days; as much as 100 ounces of the drug being used during the period. After all tendency to convulsions at last ceased, the little patient rapidly grew, and is at the present moment a strong, healthy child. In a case of the successful treatment of traumatic tetanus by Dr. Dusch, about sixty ounces of chloroform were employed. Let me close these remarks with a case of puerperal tetanus treated with chloroform.

[The following case is related by Professor Lawrie, of Glasgow, in a letter to Dr. Simpson.]

"Mrs. B., a fine young woman, æt. twenty-four, in the third month of her third pregnancy, miscarried on the 4th of this month (Jan. 1854). She lost a considerable quantity of blood, and required plugging, cold, and pressure, but was so well on Sunday the 8th that I ceased my attendance. On Thursday the 12th she complained of stiffness about the neck and lower jaw, but not suspecting the nature of her illness, she did not send for me till late on Saturday the 14th. I found trismus well marked—the spasm not extending beyond the neck—and the pulse nearly natural. Every attempt to swallow gave great pain, and produced a spasm in the muscles of the neck and larynx, which threatened instant suffocation. I forbad all attempts at swallowing, ordered nutritive enemata with 50 or 100 drops of laudanum every six hours, and pectra to the neck, with aconite and chloroform. There was little change till the night of Monday the 16th, when the pulse had risen to 120, and the spasms had greatly increased, but had hardly extended beyond the neck; deglutition was impossible. I immediately exhibited chloroform, which acted admirably, and gave instant relief. I taught her husband

and mother how to use it, and she has since been more or less constantly, and nearly continuously, under its influence. Thursday, 18th, the pulse was 96, and she swallowed with comparative ease. To-day, Friday, 20th, she is not quite so well; the pulse is 108, the abdominal muscles rather tense, and the rectum will not retain the enemata. In this last occurrence I was of course prepared; and since the 15th, she has been carefully rubbed with oil, butter, and cream. She still swallows tolerably well. My *prognosis* in this case was from the first serious, for although the pulse was natural, and the spasms had not extended beyond the neck, deglutition was nearly impossible, and suffocation was often imminent. One symptom I have forgotten, which is often one of the most distressing—a constant cough from accumulated mucus, which cannot be raised or got rid of. In two days it has disappeared. I now anticipate recovery. The *treatment* has been negative, with the exception of the chloroform, which has been most useful. I attribute the improvement on the 17th and 18th entirely to it; and if Mrs. B. recovers, she will owe her life to your invaluable discovery."

Even when not curative of tetanus, the use of chloroform has proved of no small service in relieving the sufferings and agonies of the patient. Thus, in a fatal case of puerperal tetanus, the medical gentleman who drew up the case observes, "We had the just comfort of finding the paroxysms materially alleviated by chloroform, which was used during the last sixteen hours of the patient's life. 'Chloroform! Chloroform!' was the poor sufferer's anxious exclamation whenever she felt the spasms impending, and comparative tranquillity speedily followed its application each time." Our practical power over the most rapid and fatal forms of tetanus perhaps amounts yet to little more than a "meditatio mortis." But even to alleviate the sufferings attendant upon such a dreadful disease (should we effect no more), and to produce a state of euthanasia, is surely an object worthy of the best directed efforts of the medical art.—*Monthly Journal of Medical Science, Feb.* 1854, *p.* 97.

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## 30.–LOSS OF SENSATION, AND OCCASIONALLY OF MOTION IN THE LOWER EXTREMITIES.—HYSTERIA.

Under Dr. Rowland, at Charing Cross Hospital.

[Sarah Poulton, aged 25, thin and delicate; married, and has had one child. Is exposed to much cold while engaged in her household work, and attributes this as the cause why the menses have not appeared during the last two months.]

For the last two or three months she has had severe pain of back and loins, and occasionally of the legs. She has also been troubled with pricking sensations in the calves and soles of the feet. Yesterday,

when employed in sweeping her room, her legs seemed to give way under her; she fell to the ground, and has not since been able to stand alone. She has lately had several hysterical attacks.

The lower extremities are rather colder that natural, and there is an entire absence of ordinary sensation in them, but when the limbs are forcibly flexed severe pain is excited. She has also lost the power of moving them; there is pain, increased on slight pressure, in the lower dorsal region of the spine and over the sacrum; the appetite is bad; the bowels constipated; the sleep disturbed; the urine is loaded with lithates.

A blister was applied to the spine, and, at first, a mixture containing the iodide of potassium and small doses of the bichloride of mercury was ordered, and afterwards the iodide of iron, with, however, scarcely any benefit. Subsequently she had two or three violent hysterical seizures in the ward, and there was then ordered a draught containing tincture of sesquichloride of iron, ℥xv.; tincture of cantharides, ℥iv. and ℥xx. of the tincture of aloes, to be taken three times a-day.

She continued to take this medicine until November 16, and, at the same time, galvanism was applied to the palsied limbs. The improvement was manifest even from day to day. On the 26th of October sensation was nearly complete, and she was able to walk across the wards, but not without considerable assistance.

Nov. 16. She can now walk with very little support; the sensation of limbs is but very slightly impaired; she has not menstruated; the legs, when flexed, are no longer painful.

To take ℥iij. of Fowler's arsenical solution in water, with half a drachm of the compound tincture of cardamoms three times daily.

23rd. Walks now without support; sensation perfect. For the last few days she has complained of pain in the lower part of the back and abdomen; the catamenia have not re-appeared. Rep.

On the 28th, sensation being natural, and motion nearly regained, she was discharged from the hospital, and Dr. Rowland took occasion to make the following remarks:—

Looking at this case from one point of view, the suspicion of structural disease within the vertebral column might be entertained. Thus, there were prickings and pains of the lower extremities, which suddenly terminated in loss of sensation and motion. But a closer acquaintance with the symptoms tended to remove such apprehension, for, besides the hysterical paroxysms that occurred both previous and subsequent to admission, a more minute analysis of the local symptoms gave results not easily reconcilable with the existence of organic lesion. The limbs were numb rather than decidedly anæsthetic. When force was used for the purpose of flexing the joints, the patient cried out with the pain, and the legs were sometimes painful, even when at rest. The pain of back varied from day to day, sometimes being very severe, at others almost null, while slightly pinching the integument covering the spine was at least equally productive of suffering as firm pressure.

Moreover, the countenance was often flushed and excited, and there was a good deal of nervous agitation in her manner. These, and similar symptoms, interspersed with those more decidedly hysterical, soon removed all doubt as to the nature of the malady, an opinion which the subsequent history of the case has confirmed.

In this patient, a type of hysteria is presented which bears a near resemblance to structural disease. Instead of the instability or proteiform character usually belonging to the complaint, they were here symptoms pertinaciously continuing for a long period, and at length slowly and gradually subsiding under treatment. In the zeal for pathological discovery, affections merely functional, or which at least exist independently of any discoverable change in the texture of organs, have scarcely been allowed their due importance. In practice, however, it is highly essential to recognise them. Several examples of this kind have lately presented themselves at the hospital exhibiting various forms, but each case preserving its individuality for a lengthened period.

It is true that some cases of hysterical palsy are little more than mere fantasy, and are kept up in a great measure by the patient lending herself to the task, and refusing to exercise her command over the refractory muscles. A rough shock or a strong moral impression may at once remove the disorder; but it is very doubtful whether any such means would be productive of benefit in cases like the present. In some respects this form of palsy resembles that of the portio dura, caused by exposure of the face to a stream of cold air, which, although unassociated with cerebral disease, is often tedious in its cure. In like manner the hysterical paraplegia may commence with irritation of the uterine nerves. It is always accompanied by some kind of derangement in the functions of the womb, and is totally unallied with organic change, or any action conducting to such change in the brain or spinal marrow.

The pain of back of which this woman complained was of that kind commonly known as spinal irritation. It was by no means a constant symptom; but neither its accession nor its subsidence was marked by a corresponding change of the principal affection.

This spinal irritation appears to me to have had too great influence assigned to it in the causation of disease. It is one of those pathological conditions that dwindle into insignificance under steady observation. That it is commonly found in conjunction with hysterical affections is indeed undeniable, and so far it is valuable in diagnosis. Occasionally, too, applications to the tender points of the spine may seem to mitigate the other symptoms. but far more frequently this practice is followed by no good result. The spinal pain may be observed to come and go repeatedly in some cases, or to change its seat without occasioning the slightest mitigation of the hysterical troubles.

In the early part of the treatment of this patient, iodine and

mercury were given, but no benefit followed. The aloes and iron produced immediately an evident improvement. Sensation was restored to the affected limbs long before their power of movement was regained. She has latterly taken the arsenical solution, which is often found an excellent remedy in these complaints, and even in chronic palsy of cerebral origin when a tonic is required. Galvanism was employed in this case perseveringly by Mr. Muirhead, and it has no doubt materially aided in the recovery.—*Med. Times and Gazette, Dec.* 10, 1853, *p.* 106.

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## 31.—CASES OF EXHAUSTION OF NERVOUS POWER IN THE SOLAR PLEXUS.

By Prof. Osborne, Dublin.

[Believing the depressing feelings belonging to hypochondriasis to depend on a depraved sensibility of the stomach or colon, or both, Dr. Osborne determined to try the effects of chloroform taken internally.]

The first patient who presented the conditions requisite for this experiment was a married woman, and a mother, aged 33, of a querulous disposition, as was well marked in her countenance, and who had been on a former occasion under his care and that of another practitioner, complaining of a variety of pains in the abdominal region; and she, although relieved, yet persevered in the belief that she still had some internal disease. She now appeared to labour under spinal neuralgia. After this had yielded to the application of nitrate of silver to the spine, and some other remedies, she still continued to feel an indescribable sensation of depression, and of internal annoyance, no longer to be referred to the spinal nerves; no cause for it could be detected. The appetite was good, and the action of the bowels regular. In two days, after taking ten drops of chloroform thrice daily, she *began, for the first time, to acknowledge that she was better*, and in a few days afterwards was free from complaint. The second case was that of a caretaker in the linen-hall, aged 29. He complained of the deepest dejection of spirits, and of an uncontrollable aversion to make any exertion. His countenance expressed sadness and moroseness. All the functions were in a healthy state, except that the heart's action became tumultuous when excited either by emotion or exercise; but no organic disease could be detected. He stated that he had not been addicted to excesses of any kind, and that there was no cause for his lowness of spirits. He got valerianate of zinc, and also pills to regulate his bowels; but although the heart's action became steadier, yet the depression and inward sensation continued the same. After taking twenty drops of chloroform thrice daily for two days, *he began to confess*, what he never did before, *that he was better*. His sleep being still unsatisfactory and disturbed by disagreeable dreams, he was ordered to

take forty drops at bed-time. He now stated that he slept with a pleasing dream of seeing his brother, who had gone to America. During the two following nights he took the same dose; and, although his sleep was interrupted by the disturbance attendant on a man in a dying state in the same ward, yet when he did sleep his dreams were pleasant, being usually that he was enjoying the company of the most agreeable of his friends. He was dismissed with a marked improvement in his countenance, and *acknowledging that he was better.*

The third case was that of a farmer from the county Wicklow, twenty-eight years of age. In him the poet's exclamation *Beati agricolæ!* appeared to be completely reversed. The angles of his mouth were drawn down, his brow generally contracted, and he appeared sometimes as if contemplating suicide; yet he stated that he was in comfortable circumstances, married, and with a family. He complained of an inward sinking and sense of depression, so constant and overpowering, that for some months he could not command himself to make any exertion, and had become unable any longer to attend to his business. His bowels were usually torpid, but although he had repeatedly taken purgative medicines with effect, yet he had obtained no further benefit. A careful examination having been made without detecting any disease, he was ordered to take ten drops of chloroform thrice daily, and two assafœtida pills every alternate night. At the end of about four days of gradual improvement his countenance had become placid. *He confessed that he felt much better;* and in a few days afterwards, feeling a strong desire, and also a capability, of resuming his ordinary vocations, he went home.

These cases are selected as being nearly free from complication. It must, however, be recollected, that there are several other uses to which chloroform may be applied in affections of the stomach and intestinal tube, but this appears to be one of the greatest value, inasmuch as no other medicine can be named which in this respect seems to come into competition with it. How far the effect is permanent and capable of completely removing the sensation of hypochondriasis, or in what degree it may require to be resumed or repeated, Dr. Osborne as yet has not been able to determine.

The menstruum which Dr. Osborne used in the above and other cases was the decoction of Irish moss (carrageen). With this chloroform forms a uniform mixture, and in the proportion of ten drops to the ounce they remain for an indefinite time without separation taking place. The taste of the mixture is sweet like that of a heavy syrup, to relieve which it may be well to add a few drops of some aromatic or bitter tincture.

Another mode of avoiding the pugnency of chloroform is by giving it in combination with tinctures, as it is soluble in alcohol, and remains dissolved even in proof spirit. The following is a specimen of this kind of formula, and is peculiarly grateful to the taste,

and susceptible of various additions and alterations, according to the requirements of individual cases:—Chloroform, and tincture of ginger, of each half an ounce; aromatic spirit of ammomia, two drachms. Mix. Twenty-five drops to be taken thrice daily in a wine-glassful of milk.—*Dublin Quarterly Journal, Nov.* 1853, *p.* 463.

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## 32.—SCIATICA, AND ITS TREATMENT WITH CROTON OIL.

By Henry Hancock, Esq.

[Mr. Hancock is of opinion that mechanical irritation of the nerve within the pelvis is the most frequent cause of sciatica. This may be from loaded colon or cæcum, or from tumours formed within that cavity.

*Case* 1.—The wife of a clergyman consulted Mr. H. six years ago, for sciatica which had existed nearly two years. Internal remedies of many kinds, and all varieties of counter-irritation had been employed without any success.]

Upon carefully examining the large intestines, the cæcum and ascending colon appeared distended, and yielded a dull sound on percussion. Under these circumstances I concluded this was a case depending upon local irritation within the pelvis, and not upon rheumatism or inflammation of the nerve, and therefore ordered—croton oil, one minim; blue pill, extract of hyosciamus, each four grains; compound extract of colocynth, eight grains; to be divided into four pills, two to be taken that night: that she should gradually diminish the quantity of morphia until she left it off entirely, and abstain from solid food until I again saw her, which I did on the day but one after. I then found her much relieved, but extremely angry at the violence of the medicine, which had acted very efficiently, dislodging a large quantity of hard, lumpy, dark-coloured feculent matter. The pain, though diminished, was still very great, but she described it as having assumed the sensation of a severe bruise rather than the intense sharp burning pain which she had hitherto experienced. Her bowels had not acted for twenty-four hours, and as up to the time of their ceasing to act the evacuations were not simply fluid, but continued to present scybalous matter, I prevailed upon her to repeat the pills at night, assuring her that when they ceased to meet with obstruction, they would act less powerfully.

After another interval of a day, I again saw her. She was then (and she expressed herself) much better. The acute pain had entirely left her, and the sensation of bruising was so much diminished that she described it as more like numbness than anything else. She assured me she had not been so well for months. Her tongue was cleaner, abdomen softer, she could now walk across the room without pain, and had only taken her morphia once on the preceding day; her pulse was weak and her skin cold and clammy. I ordered three grains of

the sulphate of quinine every four hours, and the morphia to be discontinued entirely. Under this medicine she rapidly recovered; the sensation of numbness disappeared, and she returned home cured after being in London for a fortnight.

*Case* 2.—Mrs. G., residing at Brook-green, consulted me for lumbago and sciatica of the right leg. She had suffered for three months, and had been told it depended upon rheumatism, and was treated accordingly by cupping, blisters, warm bath, colchicum, &c., but without experiencing any relief. I prescribed the croton-oil pills as in the preceding case. She took them twice and was cured.

*Case* 3.—The Rev. E. C. consulted me for sciatica of the right leg, of two months' duration, but very severe. He is a very talented, strong-minded man, and fond of athletic exercises; but he describes the pain as so intensely severe as to be almost beyond the power of endurance, that it entirely deprived him of rest, the only easy position being that of sitting; that when he endeavoured to stand upright or to straighten his leg, he could scarcely refrain from calling out. He was first attacked with lumbago after riding in an open gig; but being engaged to shoot the following morning, he applied a large mustard poultice over the loins, which relieved him so much that he thought himself sufficiently recovered to keep his appointment; but after walking for about an hour, his sufferings became so great, he was obliged to return home, and go to bed. He placed himself under the care of a gentleman, who gave him steel and quinine, and citrate of iron with quinine, and also applied chloroform blisters from the hip to the external malleolus by means of strips of lint dipped in the chloroform, and retained by bandage over the course of the nerve. This produced a broad stripe of blistered surface down the entire length of his leg, but increased rather than diminished his sufferings. He sought other advice, but with so little benefit, that he wound up his narration by saying—"Mr. Hancock, it is a most remarkable thing, but you gentlemen do not appear to me to understand anything at all about the complaint." His tongue did not indicate anything particular, neither did his pulse. He was fresh-coloured, stout, and full-bellied. I told him that, however well the treatment pursued might be adapted to some forms of sciatica, I did not consider they were suited to that under which he was labouring; that I believed nineteen out of every twenty cases of sciatica depended upon mechanical irritation of the nerve within the pelvis by the pressure of the loaded intestine upon it before it left that cavity; and that I had very little doubt that what he required was such medicines as would thoroughly empty out the large intestines, and that he should leave off the quinine and steel for the present. He by no means liked the opinion I expressed, assuring me that his bowels were regularly acted upon once a day, adding they were like a child's, they were so easily acted upon. However, I again explained my views, and he agreed to follow my instructions. I therefore ordered him the croton-oil pills, as in the other

cases. In two or three days he wrote up from his residence, about twenty miles in the country, that he had taken the medicine, but without deriving any benefit, and without its acting as he supposed I expected it would. I therefore doubted the drugs, and consequently had the same prescription prepared in London, and forwarded to him. These acted most powerfully, and with an entire cessation from pain on the following day. The pain, however, returned in a day or two, when he repeated the pills, which acted briskly, though not so much so as on the first occasion; but he wrote me up word that the pain in the loins and around the hip was almost gone, but that he still suffered from a feeling of bruising in the calf of his leg, and was extremely weak. I ordered him sulphate of quinine, three grains, three times a day. This, however, did not afford him the relief I had observed in other cases. His bowels became confined, and the pain increased, as did the sensation of weakness, in consequence of which he begged I would not order the pills to be repeated. I ordered compound guaiacum mixture, a wineglassful, thrice daily. This acted most satisfactorily; the bowels became completely evacuated, though for several days he continued to pass scybalæ until they ultimately disappeared, and he became entirely free from pain, and could stand up and extend the limb without the slightest inconvenience, complaining only of general debility. I now ordered him sulphate of quinine in one-grain doses, and he rapidly got well three weeks from the time I first saw him.

*Case* 4.—Captain C. consulted me on December 30th, 1853, for lumbago and sciatica of twelve months' duration. Complains of pain in lower part of the back, extending towards the right hip and down the leg, and increased by fatigue. He attributes the attack to a severe fall on the flat of his back, after which he experienced symptoms simulating ague, rigors, sweats, debility, total loss of appetite, nasty taste in his mouth, and so much nausea that he could not touch anything. He says that when these symptoms were most severe, the perspiration smelt very sour and sickly. Upon questioning him, I found that he had suffered from stiffness, like lumbago, after stooping, for six months before the accident. His bowels act regularly, but his motions are generally relaxed, unless he is baulked, when they immediately become confined; sleeps badly; appetite moderately good, though very capricious; thinks he can eat largely, but is soon satisfied, and feels full after eating; easily tired, but refreshed after an hour's rest; had yellow fever slightly six months ago; urine natural; pain relieved by pressure in course of nerve; is most easy whilst lying on either side with his knees raised; the pain much increased when he lies on his back, and endeavours to extend his legs. He has been treated for rheumatism and ague, having taken colchicum and quinine in large doses, and been blistered and rubbed with various applications. Ordered croton oil, with mercurial pill, extract of hyosciamus, and compound extract of colchicum.

January 13th. Better. Medicine acted very powerfully; says he felt better directly afterwards; has been much occupied, and had a great deal of exertion, but suffered so little pain that it scarcely attracted his notice. The medicine dislodged a large quantity of scybalæ. Ordered compound aloes pill, five grains, one every other night.

27th. I again saw this gentleman, he told me he had been entirely free from pain for several days.

*Case* 5.—C. A., Esq., consulted me in Nov., 1853, for sciatica of the right leg. Had been ill four months, and treated by colchicum, blisters, &c., with but slight relief. Was bent nearly double with pain, extending down the course of the nerve, and in the lumbar region. The pain is most severe at the knee, foot, and calf of the leg; gets no sleep, and feels very weak, though his appetite is good. To take croton-oil pills, two on alternate nights.

Came again in four days. Says that the first day after he took the pills he was much better, but thinking to cure himself more rapidly, he had, contrary to advice, repeated them on the following night, when they acted so violently that he was completely prostrated; his pulse was irritable, and the pain not so well as on the day before; his skin was covered with cold, clammy perspiration. Ordered disulphate of iron, three grains, three times a day.—*Lancet, March* 4, 1854, *p.* 241.

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## DISEASES OF THE ORGANS OF RESPIRATION.

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### 33.—INFLUENCE OF THE CONTRACTILITY OF THE LUNGS AND OF RESPIRATION UPON THE CIRCULATION.

By Dr. Skoda. (Translated by Dr. W. O. Markham.)

It has been shown that the columns of blood in the veins of the neck remain unchanged during ordinary inspiration and expiration; and hence it might be judged, that the natural respiratory movements exercise no influence upon the blood in the veins. It is impossible, however, to deny, that unless, by some especial contrivance preventing, blood as well as air must be drawn into the thorax during inspiration, and expelled during expiration, so that the question here presents itself, What is that contrivance by which the influence of the respiratory movements on the circulation of the blood in the veins is prevented?

The lungs normally possess a contractile power, which causes the arching upwards of the diaphragm, and the depression of the intercostal spaces, and which persists, even during expiration. Experiments on animals show us, that when the thorax is opened the lung frequently contracts into less than half the space it occupied at the end, of expiration, when the thorax was uninjured.

The persistence of the contractility of the human lungs, even up to the completion of the expiratory act, is proved by the fact, that in healthy persons the percussion sound is not more tympanitic during expiration than during inspiration; whilst, on the other hand, the entire loss of contractility of the lungs in disease is shown by the presence of the tympanitic percussion sound during both inspiration and expiration, and the diminution merely of their contractility by the presence of the tympanitic sound only during expiration. The healthy lung must, consequently, exercise, both during inspiration and expiration, an influence upon the walls of the thorax, and upon all its contents. This influence must certainly be greater during inspiration than during expiration, but the difference can hardly be thought sufficient to produce a distinct rising and falling of the cervical veins during the respiratory movements; for, even in the intercostal spaces no marked interruption to their distended condition is observable during quiet expiration. The slight expansion of the vena cava, which must take place within the thorax during inspiration, will be compensated by the simultaneous contraction of the abdominal cavity, and the increased pressure thereby caused on the inferior vena cava; and the contraction of the vena cava within the thorax, accompanying expiration, by the enlargement of the abdominal cavity, and the consequent diminution of pressure upon the inferior vena cava.

But there is no such thing as pressure on the vena cava during tranquil expiration, so that the blood cannot thereby be driven backwards in the vena cava, nor the valves of the cervical veins be called into action. Consequently the contractility of the lungs, which is of about equal force during inspiration as during expiration, occasions a continual hastening of the current of blood in the veins, when the respiration is normal, and in conjunction with the slight widening and narrowing which the upper and lower venæ cavæ undergo, prevents the appearance of any undulatory movements of the blood in the cervical veins.

As regards the influence of the contraction of the lungs on the other parts of the circulating organs, it must act both upon the auricles and ventricles, and favour their dilatation. It is overcome by the contraction of the auricles, and still more easily by that of the ventricles, but aids the dilatation of the auricles and of the ventricles.

The contractility of the lungs, indeed, opposes the contraction of the pulmonary artery, but its force is so slight in comparison with that which produces the systole and diastole of the pulmonary artery, that its absence can cause immediately no appreciable change in the condition of that artery. Not so, however, is it with the capillaries of the lungs, for these vessels are placed in the most favourable condition for the passage of the blood through them, in consequence of the tension exercised upon them by the contraction of the lungs.

The expansion of the pulmonary veins, caused by the contractility of the lungs, exercises no influence, either in impeding or in hastening

the circulation of the blood. The contractility of the lungs is very insignificant when compared to that of the aorta; and even though it did produce an expansion of the thoracic aorta, such expansion would neither assist nor impede the circulation. Hence it appears, that the contractility of the lungs aids the circulation of blood in the systemic venous system, assists the filling of right auricle and ventricle, and the passage of the blood through the capillaries of the lungs; that it consumes a portion of the contractile power of the auricles and ventricles, and renders almost null the influence of the normal respiratory movements upon the circulation.

The actions which have been here ascribed to the contractility of the lungs are most manifestly shown during the act of impeded inspiration. If the cervical veins previous to such forced inspiration are filled with blood, they will be emptied during its act, and even compressed by atmospheric pressure. Such an inspiration, moreover, consumes a great part of the contractile power of the auricles and ventricles, and it is possible. that the diminution of the pulse, so often observed when the inspiration is impeded, is occasionally caused by such consumption of the contractile power of the left ventricle. Thus we see, that an impeded inspiratory movement hinders the circulation.

The increased velocity of the current of blood flowing from the cervical veins and inferior vena cava into the superior vena cava and right auricle does not increase the rapidity of the current in the other veins; for these, on account of the yielding nature of their walls, whenever suddenly emptied of their blood, are compressed by the weight of the atmosphere, and the propagation of the increased velocity to the other portions of the blood thereby prevented. On the other hand, the loss of a part of the contractile force of the left ventricle necessarily causes a diminution of velocity in the systemic circulation. In like manner will the pulmonary circulation be retarded. The before mentioned inspiratory movements cause widening of the arteries, veins, and capillaries of the lungs, whereby the current is retarded. In addition to which there is also a corresponding diminution of the contractile power of the right ventricle.

An impeded expiration causes a like pressure upon the tensely rendered contents of the thorax and abdomen. The effect of this pressure must be different upon different parts of the circulating organs. The blood of the right auricle and the vena cava will be forced back into the venous trunks which open into these veins, until its reflux motion is arrested by their valves.

If the expiratory movement be of no great duration, its influence does not reach much beyond these valves; but when it is prolonged, the blood accumulates in all the veins which enter into the thorax and the abdomen, and this accumulation at length extends to the whole of the veins and the capillaries of the systemic circulation; increased pressure in the arteries is thereby required for its removal, and this takes place when, through the heart's movements a portion of

the contents of the vena cava are removed, and through their narrowing the influence of respiration upon them, lessened.

Expiration opposes the expansion of the auricles and ventricles, which therefore is effected solely by the vis a tergo: but on the other hand it assists their contractions, and is thus a frequent cause of the increase of the pulse which is felt at the moment of expiration, when the breathing is impeded; a sudden expiratory movement, indeed, under such circumstances, as, for instance, coughing, occasionally creates a strong pulsation in the arteries during the heart's diastole, which pulsation is evidently caused by the sudden compression of the distended left ventricle and aorta.

Expiration tends to produce a narrowing of the arteries, veins and capillaries of the lungs, and in this way increases the friction between the blood and the walls of the vessels. It impedes the pulmonary circulation, for the increase of the systolic power of the right ventricle produced by expiration is far from compensating for the increased friction between the blood and the vessels, which is also produced by it.

In like manner expiration impedes the systemic circulation. Thus it appears, that during a forcible inspiratory effort, the circulation of the blood is interfered with by the consumption of a portion of the heart's force, and that during a forcible expiration it is likewise impeded by increase of the friction between the blood and its vessels in one great division of the circulating system. The alternation between inspiration and expiration under such circumstances eases the circulation, inasmuch as at the conversion of one act into the other the impeding force of the one ceases before that of the other begins.

There is no impediment to the entrance of air into lungs which are highly emphysematous, but whose bronchial tubes are neither narrowed nor occluded; the expiration is performed by the muscles of expiration on account of the lung having lost its contractile power, and even here, when there is no febrile action and the patient in repose, the expiratory effort is not great. But on account of the want of contractile force, the air is not driven equally out of all parts of the lungs, but more particularly from its superficial portions and its borders, and so conversely is the air drawn chiefly into those parts during inspiration. In the central divisions of the lungs there is but little renewal of the air. Respiratory movements of this kind cannot facilitate the passage of the blood through the lungs; but on the contrary, the loss of contractility of the lungs causes the filling of the heart's cavities to be performed entirely by the vis a tergo. In such cases the circulation is not facilitated by the alternation of the inspiratory and expiratory movements; the cervical veins, particularly when the patient lies down, remain distended with blood, not only during expiration, but also during inspiration, and there is also a high degree of cyanosis present, even when the breathing does not appear much affected.—*Monthly Journal of Med. Science, Feb.* 1854, *p.* 159.

## 34.—THE CONDITION OF THE RESPIRATION IN DISEASE.

By Dr. Samuel Wilks, Physician to the Surrey Dispensary.

[Dr. Wilks endeavours to show the increased number of respirations in all febrile affections. He was led to reflect upon this condition from reading in 'Carpenter's Physiology,' "that sometimes in typhus the number of respirations is depressed from the influence of the morbid poison in the system."]

It requires a little consideration to see clearly on what the number of respirations, either in health or disease, depends. The amount of the respiratory process might, I think, be correctly stated to be dependent upon the amount of blood to be aerated, or, in more precise terms, the degree of the respiratory process would be a measure of the amount of effete matter in the blood, or that part of it which is brought to the lungs. The impurity of the blood, and consequent increased work of the lungs, would depend upon many causes, the wear and tear of the body, various morbid conditions, the derangement of other organs, &c. The only means for measuring acurately the amount of work done, would be by the spirometer, which should calculate the quantity of carbonic acid and vapour given off by the lungs. I am not aware that of late any very lengthened or systematic observations have been made on this subject, and those formerly published by various experimenters were scanty, and to some extent contradictory; but that the function of respiration varies in different diseases, there cannot be a doubt. From all analogy, from the condition of other organs in disease, as the kidney and urine in febrile affections, it is just to suppose that the excrementitious matter in the blood is at one time more in quantity than at another, and consequently the lungs would have to take their part in an increased effort to remove it. One measure of the amount of aeration done by the lungs is the number of the respirations. For example: if a man breathing a certain number in a minute walks quickly, or exerts himself, and the number is increased, it is fair to suppose that during such time the whole respiratory process has been exalted; and this has been found by actual experiment to be true. The number of respirations, however, in itself is by no means a measure of the amount of the respiratory process. In children and infants, the number is much greater than in adults: also in the same person, from some accidental cause, the number may be augmented, when it is not probable that the function is increased. A pleurodynia, a pain in the abdomen or elsewhere, that is excited by a full inspiration, necessitates a shorter one; and, as a consequence, a larger number is required to make up the deficiency. Thus, two short inspirations may be equivolent to one deep one. In nervous hysterical women, we often see the whole chest not fully expanded, and quick hasty inspirations, interrupted with sighing, are required to make up the deficiency. Again, too, if the lung itself is impaired, so that only a part can work, as in

phthisis, or from the pressure of a pleuritic effusion, an increased number of respirations is requisite. It is clear that a certain amount of aeration is required; and if the inspirations be small, they must be increased in number to make up the quantity. Thus, a phthisical patient may be breathing at a rate twice that which is natural, and yet be quite unaware of the circumstance. If an impediment occur to the passage of air into the lungs, then, besides a quickened, there is a difficult respiration. In diseases of the bronchial tubes, the dyspnœa and shortness of breath are most marked, and the non-aeration of the blood is shown by the lividity of the skin and venous congestion of all parts. When the lungs are congested from heart disease, a difficulty arises in the same way. The *besoin de respirer* seems to depend upon the presence of venous blood in the lungs, which, while there, is ever seeking for air to purify it, in order to allow it to pass onward. In short breath, when no difficulty is experienced by the patient, and no lividity of the skin, we may suppose that the increased number of the respirations make up for the small individual ones. Whether the blood is sufficiently aerated, may be determined sometimes by another means, founded upon the well known experiments of Bernard upon the consumption of the hepatic sugar in the lungs. For example, a girl, eleven years of age, was the subject of pleuro-pneumonia of one lung, which rendered for a time that organ altogether useless. The breathing was at the rate of 50–60 a minute, yet even this did not satisfy the wants of the system with a supply of sufficient air. For two weeks, while the respiration was so affected, the urine contained a very notable quantity of sugar, and which only disappeared upon the subsidence of the pulmonary affection.

A diminished respiration is, as far as I know, always dependent upon a cause in the nervous system; and this, if not sufficient for the wants of the blood, produces a congestion in the lungs. Lately, there have been two cases under the care of Dr. Barlow, in Guy's Hospital, of disease at the base of the brain, which implicated the pneumo-gastric nerves. In one the respirations became more and more difficult; and a copious bronchial secretion was poured fourth, just as in Dr. Reid's experiments of the division of the nerve; and in the other case, a slow consolidation occurred from inflammation. The slow respiration produced by poisoning by opium is soon followed by a congestion of the lungs.

Apart, however, from all such causes as are above named, and many others which influence the breathing, an increased number of respirations must in many cases be taken as a proof of an increased function. When the lungs are healthy, and there is no impediment to a full inspiration, I take it that an increased number is significant of an increased action in those organs. Now, if the *besoin de respirer* is dependent upon the amount of blood to be aerated, or effete matter to be removed, an increase of morbid or excrementitious matter in the

blood must necessitate a greater number of inspirations. This I suppose to be the case in fever, where, with healthy lungs, a more rapid breathing always exists. In fact, in all febrile diseases, an increased number of respirations constantly prevails, and which I take as evidence of an increased respiratory function. By any one who has not examined the subject, it might be thought that this was merely owing to the general excitement of the system, and was a part of the more rapid circulation. This, however, is not the case; for, admitting that the actions of the lungs and heart do, to a certain extent, influence each other, as is seen after violent exertion where each may be doubled, yet, as regards the number of each, in many diseases, they are quite independent. One stroke of the heart throws out as much blood, whether that blood be comparatively pure, or loaded with effete material. In the latter case, however, more aeration and respiratory efforts would be required than in the former. The action of the heart and lungs, then, depending mainly upon different stimuli for their operation, we cannot expect to find any constant relation between them.

The constant increase in number of the respiratory act, in all febrile disease, I am surprised has not been more distinctly stated by authors. In fever it is the most constant symptom, excepting always the nervous depression, which is the only invariable phenomenon of this disease. I have before me a great many cases of fever, with a daily report, among other conditions, of the pulse and the respiration; and the latter shows very often much more marked change than the former. In an adult, the ratio of the respirations to the pulse is as 1 to $5\frac{1}{2}$ or 6, *i. e.*, making the pulse about 70, and the respiration 12–14 per minute; while in children, it is as 1 to $3\frac{1}{2}$ or 4; and in young infants, as 1 to $2\frac{1}{2}$. In most cases of fever (excluding of course those with pulmonic complication), the pulse being about 100, the respiration is 25 or 30 per minute, being a much higher ratio than in health; the proportion, in fact, is doubled, being as much as 1 to 3. During the course of the fever, the respiration remains high, while the pulse may be natural, or below the standard; so that, in fact, no proportion can be obtained between them. A woman, aged 30, with typhus fever, a mulberry rash, and no chest or abdominal complication, had a pulse 116, while the respiration was 36 in the minute. The pulse soon became 100, and the respiration 32. The pulse sank next day to 90, and afterwards still lower, until it reached 52; while the respiration had only reached 26. The skin was still hot and dry. The pulse sank still lower, to 42, while the respiration was 22. The respiration is there seen to be as much above the standard of health, as the pulse below it. Perspiration broke out, and the patient convalesced, when the pulse got up and the respiration went down, until each had reached its natural standard. Such a case is an example of the rule in fever—the independent course of the heart and the lungs in reference to their own peculiar duties. A man now under notice,

with typhus, had his pulse 132, and respiration 36. As he is improving, his pulse has fallen to 72, while his respiration is still 24; the proportion between them being as 3 to 1. When fever patients get very low, their breathing is often more rapid than this; but then other operating causes come in to produce the result, as the congested state of the lungs. In such a case, where at first the pulse was 104, and the respiration 26, the patient sank down, until the respiration became 38; but, at the same time, the pulse receded to 96. During the recovery, a rapid diminution of the numbers of respiration took place, and reached 14, when the pulse had only got to 64, and the patient convalescent. A man, with fever and great cerebral oppression, had his pulse for many days 44, while his respiration was 24. A woman with fever had a pulse 64, and respiration 32, or the former double the latter. As she progressed, the pulse remained the same for a fortnight, while the respiration gradually came down to the normal standard.

In other febrile diseases, I have found the result to be just the same, viz. that the numbers of respirations have always remained high, and out of all natural proportion to the pulse, while the fever lasts. In the exanthemata, as scarlatina, the result is the same as in common fever. As the skin and the lungs have to a certain extent a supplementary action, as regards the evolution of humidity, and even the aeration of the blood, I was anxious to find if the respiration was still high, when the skin was moist; and I found it to be as I before stated, if febrile symptoms existed. In rheumatism, invariably, as in fever, the respirations are increased in number, and this altogether independent of the heart's action. The effect of lemon-juice in lowering the pulse is well known, and exemplified in two of the following cases. The following are the first six in my note-book of acute rheumatism:—In the first case, the pulse was 96, and the respiration 36. In the next, the pulse was 100, and the respiration 30. In the next, the pulse was 88, and the respiration 28. In the fourth case, where was some cough and an old cardiac bruit, the pulse was 132, and the respiration 40. In the next two, lemon-juice was given: no chest symptoms, and profuse perspirations. In the former case, the pulse was 110, and the respiration 40. On the following day, the pulse was 100, and the respiration 32. In three days, the pulse had fallen to 76, while the respiration was still 32. During convalescence, the pulse remained steady, while the respiration gradually subsided to 17. In the last case, where lemon-juice was given, the pulse was at first 120, and the respiration 36. The pulse in three days lowered to 70, while the respiration had only reached 32. After three days more, the pulse was still 70, while the respiration had got down to 24. The pulse was thus seen rapidly to fall under the use of a drug which influenced the heart, while the respiration took its own course slowly to descend.

I have mentioned sufficient cases to draw more particular attention

to the fact, that the respiratory act is exalted in febrile disease, and in proportion to the fever, and is not dependent upon, or proportional to, the action of the heart. As I before said, I do not allude to those cases where any pneumonia, pleuritis, or bronchitis exists, or even that hypostatic congestion in fever, which approaches so nearly to inflammation. In all such inflammatory affections of the chest, the rapid increase of the respiration is well marked, and draws attention to the condition of the lungs, and is a sign, indeed, not to be overlooked, particularly in the course of chronic disease, and where the patient is not likely to make any complaint. The state of breathing, however, to which I have particularly drawn attention, is not so rapid that the medical attendant observes it at all,—it is only by watching the movements of the chest that he becomes aware of their increased frequency.

I will just mention one or two other cases of disease to show the independent action of the heart and lungs, the nervous influence conveyed to one being different from that conveyed to the other, and the two little affecting each other. During the last year, I have constantly seen a man the subject of some obscure cerebral affection, and who occasionally has fits of an epileptiform kind. His pulse is never more than 32, (and the heart's action corresponding); on one occasion it was 26, but the number of his respirations is normal. A young man died of disease of the brain, and his pulse was sometimes as low as 56, though on excitement, it soon rose to 80, and yet his respiration during this time was 28-30. A young child I lately saw with hydrocephalic disease, had its respiration never more than 20, while the pulse was 120.

The condition of the heart and lungs must then in disease be considered to a great extent separately; for although the two organs are intimately connected, each has its own independent function and action. In a case of extreme bronchitis, with great pulmonary congestion, and a general venous stagnation, the state of the radial artery is taken as a test of the condition of the circulatory system and of the powers of the patient. Although the veins may be full to bursting, bloodletting is not considered, because the arterial system denotes emptiness and weakness, and the heart feebleness. A stimulant is often given in such cases when the pulse is small, but which only increases the evil. I believe, in such cases, a small bloodletting would often be useful in relieving the circulation, merely by its mechanical effects, and which, I apprehend, to be the principal use of this remedy. The following is a good example of this treatment:—A stout boy, seven years old, who had a chronic cough after pertussis, and who was in a condition commonly called asthmatic, was one winter's day seized with increased difficulty of breathing. The symptoms rapidly became so severe that death was expected. The head was thrown back, the face and body were blue, the eyes protruding, the dyspnœa excessive, the pulse quick and hardly to be felt, and a fatal issue evidently near at hand. The prominent jugular vein stood out tempt-

ingly. It was opened, some few ounces of dark blood escaped, the congestion was very soon relieved, the breathing became tranquillized, the boy lay back and was soon in a sound sleep, and the next day was comparatively well. I mention this as an instance exemplifying how useful and often necessary it is to regard the pulmonic circulation more distinctly, and more apart from that of the general circulation.

A very rapid respiration is generally indicative of an inflammatory affection of the lungs, unless it arise from a nervous cause, which is usually evident; and a difficult respiration accompanies affections of the air passages, and all causes which hinder a free ingress of air to the lungs. The purport of the present paper is to show more distinctly the increased rapidity of respiration in all febrile disease, and which I take as an evidence of a temporarily increased function. Without, however, laying too much stress upon any of the theoretical statements I may have mentioned, I would at present only draw more particular attention to the fact, that in all febrile diseases, the *number* of respirations is much increased, and has a certain relation to the fever, and that this symptom is as constant as any alteration in the character of the pulse, skin, urine, &c. A more detailed account of the state of respiration in disease, I shall reserve for another communication.—*Association Med. Journal, Feb.* 17, 1854, *p.* 145.

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## 35.—ON COUGH IN GENERAL, AND ON HOOPING-COUGH IN PARTICULAR.

By Dr. R. B. Todd, F.R.S., Physician to King's College Hospital.

[Cough is "a sudden convulsive expiratory effort." Irritation of any kind upon the pulmonary mucous membrane will produce *cough;*—irritation of the nasal mucous membrane will produce *sneezing*, another expulsive effort. It should be observed, that the nasal branch of the mucous membrane is supplied by sentient branches of the fifth nerve, while the pulmonary surface is supplied by branches of the vagus; and it has been proved that irritation of the vagus, in any part of its course, will produce cough similar to that which occurs in any disease of the respiratory organs.]

A common cause of cough—indeed, a much more common one than is generally supposed—depends on irritation of the pulmonary branches of the vagus, consequent on the pressure exerted on them by enlarged bronchial glands. Tumours, also, of various kinds are capable of exciting cough in a similar way, and the development of tubercles in the lungs may produce the same effect. Aneurisms not unfrequently give rise to a cough, which may baffle us in our endeavours to account for ts production; and, indeed, cough is often a very important symptom in the diagnosis of aneurism, and one from which we frequently derive assistance in localising the disease. An aneurismal tumour may press upon the branches of the vagus distributed to the trachea

and bronchi, and thereby excite the most severe paroxysmal cough. Of this there is an excellent example now in Fisk ward. The patient is a man who was admitted for cough of this character. We carefully examined his chest without being able to discover any indications of disease in the lungs; but at length we obtained evidence of the existence of an aneurismal tumour, which, most probably by pressing upon some branches of the vagus, excited the violent cough, that constituted so prominent a feature in the case.

So, again, inflammatory ulceration of the trachea, whether primary or secondary, resulting from the pressure of an aneurismal tumour, especially about its bifurcation, where there are many branches of the pulmonary nerves, may cause a very distressing cough.

Thus, then, in reviewing the various circumstances under which cough may occur, you may enumerate the following kinds of this affection:—1st. The throat cough, the exciting cause of which may be either in the fauces or in the larynx. 2ndly. The tracheal or bronchial cough, when the trachea or primary bronchi are the irritated parts. 3rdly. The pulmonary cough, when the smaller ramifications of the bronchial tubes or the lungs are the seat of irritation. 4thly. Practical men will admit, I think, the existence of a cough dependent on gastric irritation; and, lastly, in persons of highly nervous temperament, there is the nervous cough, which, in most instances, is no more than a convulsive affection of the throat muscles.

Of these forms of cough, those which most frequently come under our observation are, the throat cough and the pulmonary or lung cough. Both are very prevalent at this time of the year. The former is the common cough of ordinary colds, and may be readily distinguished by the absence of all abnormal phenomena, connected with the breathing sounds, and by the swollen and red condition of the mucous membrane of the fauces, and more or less of hoarseness. In more chronic cases, this membrane is less or not at all swollen, and assumes a dusky red hue and a lax condition. Coughs of this kind are repeatedly mistaken and treated for pulmonary coughs, and the patients condemned to take large quantities of nauseous drugs; whereas many of them are easily curable by local treatment. This kind of cough is often exceedingly violent and distressing, and is not generally accompanied by any other sputa then throat mucus and saliva.

The more common form of lung-cough is that which attends bronchitis. This occurs generally in paroxysms; it is accompanied with expectoration, which is the more abundant in proportion to the extent and severity of the bronchial affection. We find it likewise in connexion with tubercular or other disorganisation of the lung, and the more severe in proportion to the extent of pulmonary destruction and consequent bronchial irritation. Under these circumstances, an expectoration, generally copious and purulent, follows the cough; and, indeed, the presence of this matter in the bronchial tubes very frequently aggravates the cough. Another form of lung-cough is short

and dry, or accompanied by little or no expectoration, and apparently kept up by some permanent irritant in the lung's substance, as crude tubercles scattered among the bronchial ramifications. Such a cough is a common precursor of confirmed phthisis, or, more correctly, an attendant on its early stages.

Such are the ordinary causes and forms of cough.

*Hooping-Cough.* There is yet one other form so peculiar and characteristic, constituting as it does, not alone a symptom, but in truth a disease. The hooping-cough, so called from its peculiar final whoop, which is a sign that the patient is again taking breath, is not often brought under our notice in the wards of an hospital. It is much more common among the out-patients of an hospital than among the in-patients.

In the first stage, the symptoms are febrile and catarrhal, and the disease often passes for an ordinary cold. This state continues for ten or twelve days, and is then succeeded by the cough. the peculiar feature of which is, that it occurs in paroxysms, lasting some time, and following each other at variable intervals, and constituting the second stage of the disease; but, during the intervals between the paroxysms, the patient feels quite well, and one would hardly imagine there was anything the matter with him, except in the advanced periods of the complaint. The complete remission, which takes place, in many cases, between the paroxysms, is not the least curious feature of the disease.

[The third stage varies. The patient may recover, or certain changes may take place in the lungs and circulating system, which may lead to a fatal termination. Dr. Todd proceeds:]

Let me direct your attention to these secondary changes, which occur in the lungs and vascular system, after this disease has lasted for some time. At first, the lungs are not at all affected; so that hooping-cough can no more be considered a disease of these organs, than can an aneurismal or other tumour pressing upon the vagus nerve, and in this manner exciting cough, be so regarded. After the cough has continued for a long while, however, changes take place, affecting the lungs and the general appearance of the patient. The countenance becomes full and bloated, and the capillaries distended, especially those of the conjunctivæ, which look watery and swollen; and some of these minute vessels often burst, giving rise to some chemosis. From this state of countenance, a practical eye can generally at once recognise the nature of this malady, under which the patient labours.

Alt these changes result from the circulation in the capillaries being retarded, in consequence of the violence of the cough. At the same time, and for a like reason, the pulmonary circulation becomes similarly affected; the secretion of the bronchial tubes becomes altered; these tubes pour forth more freely than natural a watery mucus; the lungs become congested and œdematous; more or less crepitation is heard in different parts of these organs, according to the amount of fluid in the tubes, or œdema present; and this crepitation is usually most audible towards the lower part, being sometimes more distinct in one lung

than in the other. The sound on percussion over the base of the lungs is duller than natural; and this arises mainly from the œdematous state of these organs, but in part, also, from the quantity of mucus present in the bronchial tubes, and from the expiratory efforts having emptied some lobules of air more completely than others, (some lobules being, perhaps, perfectly emptied in this manner, and, consequently, quite collapsed); and, lastly, from the altered bronchial secretion plugging up the entrance to one or more lobules, and in this way preventing the free ingress of air. This condition of lung, in which the ingress of air to certain portions is prevented, and of which certain other portions have also been completely emptied of the contained air, has been long known to pathologists under the name of "carnification." A carnified lung has a fleshy look, does not crepitate under pressure, and sinks in water; and this condition may be induced by anything which causes the complete expulsion of the air out of the lung, or which entirely prevents the ingress of air into a lung previously devoid of air, as one which has never respired; and it is best seen in the lung of a fœtus which has never breathed. The most common cause of it, and that which, perhaps, developes it most completely, is the accumulation of fluid in the pleural cavity, by the pressure which it exerts on the adjacent lung. Carnification of the lung is carefully to be distinguished from hepatization. The former has nothing to do with inflammation, but merely consists in a condensation of the original pulmonary structure; the latter results from the effusion or exudation of an albumino-fibrinous material into the air-cells and finest bronchial tubes, by which the organ is rendered specifically heavier.

It was formerly supposed, that lobular pneumonia took place in hooping-cough. That pneumonia, just as bronchitis, may occur in the course of hooping-cough is certain; but the signs which used to be considered as produced by lobular inflammation, are, in reality, due to the simple exclusion of air from one or more lobules.

In the third stage of hooping-cough, if the case goes on favourably, there is a gradual abatement of the cough; the paroxysms become fewer and less severe, and the patient gradually returns to his normal state of health. But if, on the other hand, the progress is unfavourble, the symptoms become aggravated, the paroxysms more frequent, the bronchial tubes enlarged, the secretion of their relaxed mucous membrane increased, and, at length, the patient dies completely worn out and exhausted. If tubercles previously existed in the lungs in a quiescent condition, they are thrown into a state of activity, and symptoms of phthisis manifest themselves. Convulsions and coma, also, frequently accompany hooping-cough, especially in ill-nourished, badly-fed children, as the disease approaches its fatal termination. In these subjects, too, hooping-cough sometimes becomes complicated with an effusion of fluid into the lateral ventricles of the brain, and the phenomena of hydrocephalus are developed.

*Causes.*—In entering into the consideration of the causes of hooping-cough, one of the first questions that suggests itself is, whether the malady has its seat in the lungs. That hooping-cough is clearly no disease of the lungs, is shown both by its clinical history, and by the fact, that auscultation can detect nothing abnormal in the voice or breath-sounds of a patient in the earlier stages of the complaint.

Its cause does not depend upon any peculiar state of the larynx or trachea; for there is no permanent affection of the voice, nor of the laryngeal muscles, nor of the glottis, nor are the symptoms such as diseases of the larynx or trachea usually give rise to.

Does the disease depend upon any morbid condition of the bronchial glands? The bronchial glands are often considerably enlarged, without such a cough as the peculiar paroxysmal one of this disease. Nor would the patient enjoy the complete freedom from distress which so often exists between the paroxysms of cough.

Having, then, set aside all these so-called causes of hooping-cough, the only supposition now left us as to the true cause of the disease is, that it depends upon some peculiar irritation of the vagus itself. In fact, hooping-cough is a special disease of this nerve, the irritation being quite as complete as when the exposed nerve is mechanically stimulated. But the cough differs from that which is produced by mechanical irritation of the nerve, in its coming on in paroxysms at longer or shorter intervals from each other, the patient's health during the intervals being very good. This paroxysmal character of the disease, with the complete state of health in the intervals, except when the constitution or the lungs have become damaged by the effects of the cough, associates hooping-cough with other diseases, the peculiar phenomena of which depend upon some poison in the blood, manifesting its presence by the specific action which it exercises upon some particular tissue, and by the interference which it seems to offer to the due performance of healthy function. For certain poisons undoubtedly appear to have a peculiar affinity for certain tissues; thus the poison of measles appears to have a special affinity for the mucous membrane of the bronchial tubes and bowels, that of scarlatina for the throat, and so on of the other acute specific diseases. In like manner, the poison which gives rise to the phenomena of hooping-cough, seems to have a peculiar affinity for the vagus nerve; but whether throughout the whole course of that nerve, at its centre or its periphery, it is impossible, in the present state of our knowledge, to affirm with any degree of accuracy. It is no valid objection to this view of the nature of the disease, to say, that after death, no structural alteration of the vagus can be distinguished, although Autenrieth and others state, that in cases of hooping-cough examined after death, they have found the vagus in a congested condition. But congestion is much more frequently the effect, than the cause of a disease; and it may be especially so in this case. In many nervous affections, as for instance in those distressing cases of neuralgia, in which the most intense pain has

existed during life, no appreciable morbid condition of the nerves supposed to be the seat of the pain can be detected on the most careful examination after death. The poison in hooping-cough, whatever it be, produces no structural lesion in the nerves, and leaves nothing behind it, of which our senses can take cognizance.

Hooping-cough, then, as far as present knowledge enables us to speak, is a disease which runs a certain course, can be communicated from one person to another, and is probably due to the influence of a poison which gets into the system, and produces its local manifestations on the vagus nerve. It is not an inflammatory affection of any part, being simply dependent on a morbid state of the blood, caused by the introduction into it of some poison from without; and whatever inflammations may occur in the course of it must be regarded in the light of complications of the disease.

*Treatment.*—Having advanced this view of the nature of the disease, let me make a few observations upon its rational treatment, as founded upon these opinions.

Assuming hooping-cough to be a disease depending on the presence of a morbid poison in the blood, (which is the most reasonable view of its pathology), to cure the affection perfectly, we ought to find an antidote for the poison which produces it. If we could find some material which, when introduced into the system after it had received the the poison, would neutralise that poison, then we should have the same power over this malady as we now possess over intermittent fever, which, as you know, is also a paroxysmal disease, depending on the presence of some morbid poison in the system, and for which an antidote has been found in bark. But since, unfortunately, no antidote for hooping-cough has as yet been discovered, it should not be our practice to look on in silence, and let the patient cough it out; but our aim should be to find the means of guarding him against the bad consequences of the cough, and to protect him from all those complications to which I have referred.

As the disease does not consist in an inflammatory condition of any part, we may at once dismiss all so-called antiphlogistic plans of treatment. That plan, indeed, has had a fair trial; and if it had any real power over the disease, we should have long ere this accumulated abundant evidence to prove its superiority. The tendency of all the the usual antiphlogistic measures is to weaken the nutrition of the lungs and the nervous system, and to impoverish the blood; to reduce the quantity of its colouring-matter, to favour the accession of convulsions, and by the watery parts of the blood filtering through the walls of the blood-vessels, to promote the tendency to hydrocephalus.

The first point in the treatment is, carefully to guard the patient against the occurrence of bronchitis and pneumonia, as complications of the disease. Now, there is nothing which is so fertile a cause of bronchitis, as the admission of cold air to the bronchial mucous membrane. Consequently, the patient should be kept in a well-regulated

temperature ; if his illness occur in the winter, he should stay in-doors, in a roomy, well-ventilated apartment, which is not too warm, but of a uniform heat. He should be kept in this apartment, and not allowed to run about the house into rooms, or upon lobbies or staircases, which must present great variety of temperature. Early and close attention to the maintenance of a uniform temperature of the atmosphere in which the child resides, may save much subsequent mischief.

The second point is to uphold the general nutrition—to keep the patient well nourished. I do not mean, that the patient should be crammed or over-fed, but that his diet should be well regulated, and sufficient food of all kinds supplied, not only to satisfy the appetite, but also—and what is far more important—the real wants of the system. On this account, I object to keep children in this disease without animal food, as some so much insist on, though why they do so I cannot tell ; for meat, in regulated quantities, and properly masticated, is more easily digested than almost anything else ; and it differs from other alimentary substances, in the fact that its digestion consists in a simple process of solution in the stomach.

Another practice which exercises a most favourable influence on the nervous system, (and it is this that we must look to after all), is sponging the chest with *cold water* once or twice a day. The parents of weakly, delicate children often object to this plan of treatment ; but by ordering a little spirit to be mixed with the water, you not only may overcome their scruples, but in giving a stimulating quality to the application increase its efficacy. This sponging of the back and front of the chest, night and morning, exercises a bracing and tonic influence on the nerves, and in this way often acts very beneficially in this disease. Spirituous embrocations often do good in a similar manner.

In a large number of cases, one can get on very well without having recourse to drugs. Those which you will find most useful, and which I would recommend to your notice, are sedative and antispasmodic remedies, in virtue of the power which they possess in allaying irritability of the nervous system generally, such as the various preparations of opium, henbane, conium, belladonna, and hydrocyanic acid. The non-nauseating expectorants, such as chloric ether, ammonia, and perhaps senega, may be also used ; and astringents, to check excessive bronchial secretion, such as alum, sulphate of zinc, tannic and gallic acids, are sometimes necessary. But you must bear in mind, that such remedies should be used with caution, especially opiates, which in infancy and childhood are at all times to be given with great care, and more particularly if the lungs have become congested. The drugs which I would recommend you to avoid, are those which have a depressing and lowering tendency, such as tartar emetic and ipecacuanha. Many children, I am quite satisfied, while suffering from hooping-cough, have died from the too free and slovenly exhibition of these emetics.

If I had an opportunity of treating hooping-cough on a large scale,

I would, in cases in which the paroxysms are very frequent and very severe, and when, as yet, the lungs are free from congestion, but not otherwise, give a fair trial to the careful inhalation of chloroform, with the view of endeavouring to cut short the paroxysm. We know that we can arrest the paroxysm of asthma in this way; why, then, should we not be able to do the same with that of hooping-cough. I have also known laryngismus stridulus relieved by the use of chloroform; and it is now well proved that other convulsions of children may be checked by its means.

In the cases of delicate children, where there is great reason to fear that damage may be done to the lungs by the cough, this practice may prove very useful. But with reference to the administration of chloroform, this fact should always be borne in mind, and it cannot be too frequently reiterated, that due provision should be made for the simultaneous free admission of air, along with the vapour of chloroform. There is no point upon which some men seem to be more foolhardy than on this one; and it is by the neglect of attending to this, that the reputation of one of the most valuable remedies that has ever been applied to the relief of human suffering may be seriously damaged. I do not advise you to give chloroform so as to produce its full effect; it may be inhaled in small doses of ten or fifteen minims, which may be repeated at intervals, according to the severity of the paroxysms. When children are already in an exhausted and very depressed state, chloroform ought not to be administered by inhalation, or it should be given only in the smallest quantities.

Another remedy in the treatment of hooping-cough, to which I should very much like to give a fair trial, is the application of cold water, on the splashing plan, two or three times daily, with or without the inhalation of chloroform. Such a practice must be pursued with proper precautions; first, to maintain a warm temperature of the room in which it is done; and, secondly, to have the water thrown over the child rapidly, and not so as to wet the head. To let the back and chest receive the brunt of the splash. These measures combined would tend to diminish the severity of the paroxysms, ward off the occurrence of bronchitis and pneumonia, as complications of the disease, promote the general nutrition, stimulate the nervous system, and thus protect the patient from the damaging effects of the cough.—*Med. Times and Gazette, March* 4, 1854, *p.* 203.

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36.—*Remarkable Effects of the Inhalation of Chloroform in Hooping-Cough.*—It is surprising that inhalations of chloroform should not have been suggested at an earlier period in the treatment of hooping-cough, one of the purest spasmodic affections in human pathology. Some years ago, Dr. Fleetwood Churchill, of Dublin, recommended inhalations of sulphuric ether in this affection; but the discovery of chloroform put a stop to its further experiment. The treatment of

hooping-cough by chloroform is attended with difficulty in very young children. First, there is no warning of paroxysmal access; secondly, inasmuch as there are eight or ten expirations to one inspiration, the chloroform becomes evaporated before the infant has inhaled a sufficient quantity. [This objection may be easily rectified.—Ed.] Finally, young children have a veritable horror of anything coming against the mouth, so as to interfere with respiration, and they struggle against it with all their power. In the case of children, however, from twelve to fourteen years, of reasonable minds, all these difficulties disappear.

Four cases, treated by Dr. Fleetwood Churchill, were in the highest degree encouraging. The first, a young girl, aged 16, who had had hooping-cough for a month, especially severe during the night. She was recommended to inhale a few drops of chloroform upon a handkerchief, when she felt the paroxysm coming on. In two days the shrill sound had disappeared; and the cough subsided in about ten days. There was the same result with a patient aged 20. In the third case, a young lady, aged 18, chloroform was administered from the commencement, the cough was instantly suspended by the chloroform, but three weeks were required for cure. The fourth case was more severe, the spasmodic attacks were more violent and prolonged; the efforts at inspiration, and the shrill sound, such as to convey the idea that something was about to give way in the chest. The inhalations of chloroform reduced the number of the paroxysms to one-half, but without diminishing the intensity of the remainder. The patient complained of headache after the inhalation, consequently it was discontinued, and two to three minims of prussic acid, with two or three minims of the black drop, were substituted thrice a-day. The improvement effected by the chloroform was permanent.—*Arch. de Méd. Belg.*—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 191.

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## 37.—FURTHER OBSERVATIONS ON THE CAUSE OF TUBERCULOSIS.

By Dr. James G. Atkinson, Physician to the Wakefield Dispensary.

In corroboration and extension of the views I formerly advanced (vide *Braithwaite's Retrospect*, vol. xxvii, p. 73), as to the probable cause of tuberculosis, my object is to show that the earliest stage of of the disease consists in a diminished vital power, produced by various external depressing agents; that this results in a more energetic oxidation of the tissues, as a consequence of the amount of vital force having been thus lost, which retained the elements of the azotized principles in the form, order, and structure which belongs to them, and thus affording a less means of restraint against the incessant tendency of the oxygen of the atmosphere to act on their elements; and I attempted to show that tubercular deposits may, from the above causes, be regarded as the consequence of an irregular metamorphosis

of tissues, and that these may be retarded, if not prevented, by the substitution of various forms of carbonized material, and that the only class of medicinal agents which may be considered decidedly prophylactic are those which sustain the vital tenacity in opposition to the chemical effects of oxygen. Of this latter class, alcohol appears to hold a prominent place; and in addition to the facts which I have already brought forward, I will here quote the opinions on this head of Dr. Cotton and Mr. Ancell in their recently published works, which go far to substantiate my views as to the fact of alcohol being in many instances one of the safeguards from tuberculosis. The former says, in the treatment of phthisis before tubercle is deposited, that "Wine or beer in moderate quantity should be included in the diet list, and I have seen conscientious scruples upon this matter overcome on many occasions with marked advantage." We also find that Mr. Ancell, although differing very much from Dr. Johnson and others, gives the following statement on the prophylactic powers of alcohol:— "Facts are not wanting which tend to establish that the tuberculous constitution, where there is no local disease, is benefited by the moderate use of these fluids, (alcoholic), and this is sanctioned by theory, but then the stimulus must be moderate, uniform, constant, and accompanied by a generous diet, containing a proper proportion of these staminal principles, and essential elements of food, &c." He also quotes Dr. Peters, who remarks, that "Alcohol would seem to produce a state of blood opposite to that which obtains in this disease, and may thus prevent the development of it; and that the excessive use of alcohol does not destroy life by producing tuberculosis, but rather by producing other diseases, as those of the nervous system and of the liver."

It is very true that no hypothesis can take the place of statistical evidence; but it is rather more difficult than what it at first sight appears to be, to collect a sufficient amount of data to establish the truth or falsehood of my position. I have, however, endeavoured to furnish an approximation to correct results by examining the registries of deaths in this town for the last ten years, commencing on the 1st of of May, 1843, to the 1st of May, 1853; and although I am aware the numbers are far too small to justify a decisive conclusion, they are, as far as they go, satisfactory. All will admit that perhaps no class takes more alcoholic stimulants, in proportion to the rest of the inhabitants, than publicans. Thus I have selected these out by way of experiment, to ascertain the relative mortality from phthisis in this class of men. I have arranged the deaths under the four following heads:—

| | |
|---|---|
| Deaths from general diseases ..... | 3329 |
| „ „ phthisis ..... | 541 |
| „ „ general diseases in publicans ..... | 25 |
| Phthisis in publicans ..... | 2 |

I appear, therefore, from the above figures, that rather more than one-sixth of the deaths amongst the whole population of the town

arise from phthisis, whereas in publicans scarcely one-twelfth die from this disease during the same period. But these numbers, if taken without correction, fall far short of representing the real disparity between the deaths from phthisis among publicans, as compared with the deaths occurring from phthisis among the population at large; for the 3329 represents the deaths at all ages; but as about one-half of that number occurred in persons under fifteen, and as persons rarely die of phthisis under fifteen, and as publicans are all above fifteen, the figures should stand thus:—

| | |
|---|---|
| Deaths above 15 | 1665 |
| „ from phthisis | 541 |
| Publicans' deaths | 25 |
| „ „ from phthisis | 2 |

Showing a general mortality among adults from phthisis of rather less than 1 in 3, and in publicans, 1 in $12\frac{1}{2}$. Now, allowing great latitude for accidental mistakes, still the mortality by phthisis in publicans is comparatively small. What a more extensive investigation would prove, it would be difficult to say; however, there is here sufficient to demand further inquiries.

These facts are, I am aware, at variance with the observations of many excellent writers. I find Sir James Clark, nearly twenty years ago, remarks:—"We believe that the abuse of spirituous liquors among the lower classes in this country is productive of tuberculous disease, to an extent far beyond what is usually imagined—indeed, it is only necessary to observe the blanched, cadaverous aspect of the spirit-drinker, to be assured of the condition of his internal organs." Again, "the cases that are likely to be cured by the stimulating plan of treatment—by beef-steaks and porter—bear so small a proportion to the many that would be injured by it, that we do not consider it deserving of further notice." The late Dr. Graves, of Dublin, many years later, however, writes in a very different strain, and it is evidently apparent that medical opinion is by no means agreed on this subject. He says:—"Make your patient lay aside slops and tea; let him take wholesome fresh meat, bread, and good beer; the good diet will invigorate the system, and so far from producing inflammation, will do exactly the contrary." It may, however, be shown that in some cases drunkenness and dissipation have, without any doubt, been proved to be the positive exciting causes. This we do not for a moment deny, and in some instances they indubitably are; yet this admission does not invalidate the strength of my proposition; for I believe that every cause which tends to lower the vital tonicity acts as an exciting cause in producing tuberculosis, and nothing is more likely to depress the system, than the secondary effects resulting from drunkenness and dissipation, and therefore in this manner these may in some instances be productive of this disease. It is the temperate use of alcohol for which I contend, which, by retarding a too quick metamorphosis of tissues, checks or prevents the protein com-

pounds from being too readily acted on by oxygen, which state occurs in the enfeebled, or in those hereditarily predisposed. In a word, then, the abuse of alcohol may be a exciting cause in producing tuberculosis; whereas, on the other hand, a moderate supply of this compound might possibly be used as a preventative agent in persons predisposed to phthisis.

I might assert that it is almost the fashion of the present day to consider tuberculosis strictly a blood disease. Mr. Ancell avers, "that the progressive debility is the progressive decrease of vital molecular changes, first in the blood, and secondly in the solids." This statement appears to require some consideration. Is it not more probable that the solids first give way? for of whatever the vital force may ultimately prove to consist, whether arising in consequence of certain molecular arrangements in the particles of matter, or from other unknown causes, yet with our present knowledge it may be regarded as an inherent force, and liable from disease or accident to be diminished in intensity; therefore, from the many causes which are known to lower the health, it would appear that this inherent force, which keeps together the molecules of the organism, is so far weakened as to allow oxygen to act upon the various elements with a greater degree of intensity than in a normal state; and if this be so, it is evident that the solids of the body ought rather to be considered as the primary seat of the disease. Vogel says, "all attempts to demonstrate such a specific principle in the blood have failed, and the difficulties of satisfying ourselves of the presence of a specific cytoblastema of this kind, differing from the normal nutritive fluid, are so great, that the correctness of such observations may reasonably be called in question." We have also the authority of Virchow, (quoted from the 'Medico-Chirurgical Review,' No. xvi., p. 186), who says that tubercle is not developed exudation, but merely metamorphosed pre-existing tissue-elements—elements to which in their primary state the name of tubercle could not be applied; and that, consequently, the tuberculous metamorphosis is not the mark of a specific process of a particular constitution. Again, this author states that tuberculization, the indubitably local process by which the body described by the name tubercle is formed, is not a peculiar specific exudation, but a peculiar transformation of tissue-elements, &c. It seems, however, that it may be so far regarded a blood disease, if we suppose that the oxygen, conveyed by means of the red corpuscles in the arterial blood to any part where a low degree of vitality exists, combines more readily with the carbon of the metamorphosed tissues, and thereby removes with an abnormal rapidity the carbon of these tissues. The remaining elements, now in a soluble state during this act of transformation, are carried away by the veins towards the heart, but not being in their usual and normal elementary proportions, are extremely liable to form new and abnormal compounds; for we must bear in mind that the metamorphosis of tissue, which is constantly going on

in the adult and healthy man, is so evenly balanced, that exact portions of carbonic acid, urea, water, bile, &c., are daily formed, so that the man neither gains nor loses weight; indeed, this is carried on with so much precision, that the "amount of tissue metamorphosed in a given time may be measured by the quantity of nitrogen in the urine," (Liebig); but if from any cause, a disturbance in the equilibrium arises, it is natural to suppose that during the transformation of tissue great irregularities in these compounds might take place; for, as Liebig shows that "all the organic nitrogenized constituents of the body, how different soever they may be in composition, are derived from protein;" "but if one of the forces necessary for vitality be impeded, the form and structure of the compound may be so far altered by these means, as to produce the resolution of the compound into one or more compounds with altered properties;" therefore, as the arterial blood in phthisis contains a larger proportion of oxygen, and, at the same time, the vital tonicity is weakened, the result is, in the first place, a larger quantity of carbonic acid generated; and, hence, some of the usual compounds in the metamorphosis of tissue cannot be produced, in consequence of their wanting the precise quantities of carbon. This being the case, recollecting that tubercle consists of the elements of tissue, with a deficiency of carbon, I propose it, as a strong probability, that in tuberculosis, the elements of protein are deposited, minus certain proportions of carbon. This is, in fact, tubercle, and the foregoing reasons are sufficient to lead me to suppose that this is the correct theory of its formation; but we can go still further, and by an antithetical mode of argument, show that when the blood becomes too highly carbonized tubercular deposits rarely, if ever, occur; for "Rokitansky attaches great importance to an increased venosity of the blood, as an antagonistic to the formation of tubercle; and, under this head, he includes every influence which interferes directly or indirectly with oxygenization of the blood, either by diminishing the capacity of the chest, or hindering the expansion of the lungs, or by deranging the pulmonary circulation of blood, or by impeding the free access of air thereunto: for example, a case of spinal deformity narrowing the chest; a case of abdominal tumour encroaching upward, and causing dyspnœa; a case of cyanosis maintaining deficient aëration of the blood; these would be cases in which, according to this observer of hundreds of thousands, the tubercular deposits would not arise," (*Braithwaite's Retrospect*, J. Simon, vol. xxii., p. 153.) "Again, it is somewhat remarkable that in those parts of the body where the access of oxygen is impeded, peculiar compounds, containing much carbon are given out: for example, in the arm-pits, or in the soles of the feet," (Liebig.) We have attempted to show that when the vital powers are lowered tubercular deposits generally occur; now, according to Vogel, that when the system is lowered in typhus, depositions are found in various parts of the body, similar to those in scrofulosis, the essential difference being, that the

whole proceeding is accomplished more rapidly in one than in the other, and it is frequently quite impossible to distinguish tubercle from typhus matter. He, moreover, quotes Engell as an authority, that in proportion to the weakness of the vital powers, so the facility for tubercular deposition is increased.

It would, indeed, be a work of supererogation to give a detail of many of the well-known causes productive of tuberculosis. I may, however, just allude to the fact, that nearly all the writers of the present day have abandoned the ancient hyphothesis of inflammation being ranked as the common cause of this disease Every fact observable, both in man and in the lower animals, shows that whatever tends to depress and lower the system renders it eminently liable to a deposition of tubercle. Most of the cows kept in the stables at Paris die phthisical, (Louis), which effect certainly cannot be ascribed to cold. Phthisis, again, is more frequent at old age, with females than males, (Louis.) The occupations of seamen, butchers, and tanners are, on the other hand, generally considered unfavourable to the occurrence of consumption, (Sir J. Clark.) Lombard calculated that the disease is only one-half as prevalent among persons in easy circumstances as it is among the great bulk of the population. Phthisis also frequently follows both continued and intermittent fever, so close as to make them appear exciting causes; and to this list we might also add dyspepsia. The disposition of this disease, again, appears to be strongest in that condition of the body called lymphatic; whereas, when the system seems to be more highly vitalized, such as probably occurs in pregnancy, this condition appears to retard, if not to suspend, its progress; and finally, as Dr. Todd observes, "it is easy to understand how this nutritive matrix, either from deficient vitality, or some other condition, may be formed of a nature below the standard of organization, and how in this state the nutritive molecules may, instead of tissue, be converted into tubercles;"—all which evidence corroborates my views, that the first stage of phthisis may strictly be considered as one in which the vital force is acting with diminished resistance.

It has recently been advanced that the condition of the body favourable to the development of cancer is almost incompatible with that of tuberculosis, or, as Mr. Simon observes, "the one excludes the other." In cancer, this author alleges there is an obstinate excess of vitality, which will not be quenched. Now, if the first step favourable to the deposition of tubercle be a want of vital power, does the foregoing fact concerning cancer antithetically uphold my proposition as to the first stage of tuberculosis? or, in other words, as the organism is acting with more than a normal energy in one disease, and with a diminished vital power in the other, does this, I repeat, account for tuberculosis and cancer being incompatible in the same body?

From the foregoing, we draw the following conclusions :—

1st. That the ratio of mortality from phthisis, in publicans, is less

than one-fourth of the ordinary ratio among other classes of the adult population.

2nd. That the first step in tuberculosis seems to consist in some molecular change in the substance of the body—probably owing to a deficient vital attractive power among the particles—and that compounds like alcohol act by sustaining this attraction.

3rd. That phthisis is characterized by an excess of oxygen circulating in the system; and that when the blood becomes too highly carbonized from various diseases, tubercles are not deposited—to wit, in cyanosis, &c.

4th. That deposits similar in constitution to tubercle are produced under other circumstances than phthisis, and that this always occurs when the vital system is lowered—as, for instance, in typhus; and, on the other hand, when the vital force seems to be in excess, which takes place in cancer, tubercles are seldom if ever formed.

Lastly. From these we infer that the treatment most likely to prevent deposition will be generous living—wine, beer, &c.—with tonics; and that medicines containing much carbon, as cod-liver oil, tannic acid, &c., are of use, as furnishing a pabulum by which the excess of oxygen in this disease may become saturated, without acting upon the tissues.—*Lancet, Feb.* 25, 1854, *p.* 207.

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## 38.—CO-EXISTENCE OF TUBERCULOSIS WITH CYANOSIS; PRODUCTION OF HEMIPLEGIA BY DETACHMENT OF FIBRINOUS DEPOSIT FROM THE HEART.

By Dr. H. Fearnside, Physician to the Preston Dispensary.

The case, of which an outline is given below, supplies an important correction, and also confirmation, of opinions which have been recently promulgated.

It is now generally taught by pathologists, that a venous condition of the blood is eminently antagonistic to tubercular development and deposit. The doctrine is thus broadly laid down by Rokitansky: "All cyanoses, or rather all forms of disease of the heart, vessels or lungs, inducing cyanosis of various kinds and degrees, are incompatible with tuberculosis, against which cyanosis offers a complete protection; and herein we find a key for the solution of the immunity against tuberculosis afforded by many conditions which at first sight appear to differ so widely from one another."

A similar statement is made by Mr. Simon in his excellent 'Lectures on General Pathology:' "There is one signal peculiarity which attends this chronic venous condition of the blood, which I must not leave unmentioned. Not only in extreme cases of cyanosis, but in all chronic diseases where, from any cause whatever, there is defective arterialization of the blood, the patient enjoys one privilege. He is exempt (perhaps absolutely, but at least all but absolutely, exempt) from tubercular disease."

In the subject of the following report, cyanosis of the most perfect description was associated with equally well-marked tuberculosis.

T. W., a stout young man, aged 19, was first seen by me in the autumn of the year 1852. He was the son of robust parents, and his brothers and sisters were strong and healthy. Shortly after birth, his complexion was noticed as somewhat livid and blue, but the circumstance appears to have attracted no special attention for some years, until the occurrence of an accident, to which his friends ascribed his subsequent bad health. On the occasion referred to, being then seven or eight years of age, he fell into some water, and was in imminent danger of drowning. Some time afterwards, he spent the whole of a cold winter's night in the open air, having been inadvertently shut up in the yard of an unoccupied house. An illness of some duration, but the precise nature of which cannot now be ascertained, was the result. The darkness of his complexion became more conspicuous, and he began to suffer from cough, and difficulty of breathing, on any rapid movement; but his general growth and development were not arrested or impaired; he became an apprentice in a foundry; and at the time when he fell under my notice, his size and stature were not inferior to those of other young men of similar age. A few months before the period mentioned, his breathing became still more embarrassed, and his feet and legs were observed to be swollen at night; and for the preceding two months, he had been unable to follow his employment. When he consulted me, his face appeared swollen, and was darkly livid; his hands were blue and cold; and the lower limbs œdematous. His respiration was short and quick, and he had a frequent cough, with considerable expectoration. The heart's action was unnaturally strong and frequent; the cardiac dulness on percussion extended from above the fourth rib to the lower margin of the chest, and from an inch to the left of a line descending from the mammilla to the right border of the sternum. Both sounds were normal over the apex, and occasionally both were heard distinct and clear over the base of the organ; more frequently, however, the first sound was rough and murmurish, and over the second and third left costal cartilages a fine but loud grating murmur was heard. The superficial veins were dilated and prominent. There was some want of resonance on percussion under the clavicles, where the breath sound was harsh, and mixed with coarse crepitation, especially on the right side. Elsewhere, the breath sound was obscured by sonorous and liquid rhonchi, but there was no evidence of pulmonary condensation. The secreting organs were sluggish in their action; the bowels torpid; the urine high coloured and scanty.

Such were the phenomena which the case presented on the first and only opportunity which I had of examining it last year. When I next saw the patient (about two months ago), he was moribund. I found that in the interval he had been gradually declining in health, his cough having become more constant, his breathing more difficult,

and the dropsy more considerable. Four days previously he had been down stairs, and, whilst there, had suddenly, and without any premonitory symptoms, been attacked with paralysis of the left side of the body. I found him in bed, breathing heavily, and panting: his face was swollen, and of a dark purple hue: he was rather deaf, but his intelligence was not impaired; his replies to questions were correct. There was extreme restlessness; he was continually desirous of being moved. Considerable anasarca of the lower part of the body was present. The paralysis affected both motion and sensation, and was complete. The heart was beating tumultuously and irregularly, and the pulse was small, rapid, and indistinct. There was marked dulness on percussion under both clavicles; and on the right side, loud cavernous respiration and gurgling were audible. Over the rest of the lungs, loud mucous and sonorous rhonchi were heard, and so loudly as greatly to obscure the heart's sounds. He died on the following day, and his body was examined about twenty-four hours after death.

The lividity of the face, extremities, and posterior parts of the body, was very great.

*Chest.* There were very strong adhesions between the upper parts of both lungs and the walls of the chest. A cavity capable of containing an ordinary sized orange, was found in the apex of the *right lung*, and connected with it were a number of smaller cavities. The walls of the principal one were formed chiefly by thickened pleura, and a number of obliterated vessels projected from its irregular internal surface. A large quantity of tubercular matter, both grey and yellow, but chiefly the latter, was dispersed throughout the upper lobe, and collected in masses around the excavations. Some tubercular deposit was also found in the lower lobe of the lung. The upper lobe of the *left lung* was similarly affected, but to a less extent; several cavities existed there, but they were small ones, and the surrounding tubercular matter was less abundant.—*Association Med. Journal, March* 10, 1854, *p.* 222.

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## 39.—ON THE ACTION OF COD-LIVER OIL AS A CURATIVE AGENT IN THE TREATMENT OF DISEASE.

By Dr. R. M. Glover, F.R.S.E., Lecturer on Chemistry at the Royal Free Hospital Medical College.

Oils, alcohol, and the carburetted hydrogen of mines, constantly inhaled by the coal-miners, all agree essentially in affording to the blood large quantities of combustible substances; and I may mention along with this, that I have known, during my experience, many instances of young surgeons of small fortunes being compelled to go a voyage in a Greenland ship, and thus saved for some time at least from hereditary phthisis. Now during these voyages there is great consumption of nutritious substances, and perhaps not a little of alcoholic fluid.

I infer that the efficiency of the oils, and generally speaking, the hydro-carburets in tuberculosis, is due to some chemical influence which they exercise. This is supposing my premises admitted.

In the last part of Dr. Pereira's work, just published, the editors, in seeking to explain the operation of cod-liver oil, attempt to return to the idea that it is due to the iodine and bromine in the oil. They say—"as the oil contains iodine, and as it proves most successful in those maladies in which this element proves successful, it has been suggested that iodine is its active principle. Taufflied, however, denies this, and asserts that the properties of the two are not identical, for the one succeeds where the other fails. Is bromine the active agent? (It must not be forgotten that iodine and bromine are combined organically with some of the constituents of this oil, and in such manner that they are not to be immediately recognised by the ordinary tests. This fact may perhaps tend to develope a peculiar action of iodine and bromine, and endow them with an efficacy not otherwise attainable.)"

Now in 100 parts of oil there are never more than 0·04 parts iodine, and as iodine exists in all fish, what possible virtue can it have, especially as it no doubt exists combined with alkaline or earthy bodies? A fabulous reputation seems attached to bromine. I have taken the bromide of sodium to my dinner instead of common salt.

The fact is that all the chlorides, bromides, and iodides are analogous; they afford a beautiful illustration of the greatest law ever observed in therapeutics, and of which very few seem to be capable of realizing an adequate idea—viz., that the chemical properties of bodies are exactly imitated by their physiological and medicinal properties.

Some years ago, as an illustration of this great law, I selected the group of chlorine, bromine, and iodine, so closely related in their chemical and physical properties, and as the compounds of bromine had been least examined they were especially chosen; and I think I proved that the physiological activity of these bodies was as their solubility, and their facility of decomposition, with this allowance, that as chlorine is the more active element of the three, chemically, so it and its compounds are the more active of the three physiologically, *cæteris paribus*. We find everywhere bromine and its compounds occupying an intermediate place between the others physiologically as as they do chemically.

In the electro-positive salts—say, the chloride, bromide, and iodide of potassium—the chloride is the least easy of decomposition and the least soluble, the bromide more so, the iodide most, in the ratio of their activity. When we come to the electro-negative compounds—say, those of mercury—when the affinities come to be inverted, there the physiological and medicinal powers are inverted also; for instance, iodine will decompose the chloride of mercury, while it will not decompose the chloride of potassium, and the chloride here is the most active, the bromide less so, the iodide least. Now I account for this

by supposing that the activity of such substances depends in great part upon a series of molecular changes which they produce in the system, and that the elements liberated in the nascent form in the system produce a series of combinations and decompositions; but the fact remains, that these bodies are closely related, and as cod-liver oil contains more chlorides than bromides or iodides, the activity of it may just as well be attributed to the first class as to the others. But *omne ignotum est pro magnifico.* In the 'Archives Generales d'Anatomie,' for 1846, there is a paper which would seem to controvert some of these views: but for the present I shall content myself with stating that I adhere to them.

The late Mr. West, of Leeds, in an analysis of the mineral water at Shotley Bridge, in the county of Durham,—which, if his statement be correct, has wrongly fallen into desuetude,—states that there are traces of bromine, and attributes great probable powers to it. Now, as the proportion of bromides—for of course the bromine must exist in combination—is in infinitesimal proportion to the chlorides, this idea is another illustration of the hallucination which many men appear to entertain with regard to these bodies.

As a further illustration of the relationship between all the properties of the chlorides, bromides, and iodides, I may give an extract from the recent letter of Dr. Cogswell on the 'Employment of the Chlorate of Potass in Cholera,' published in the 'Lancet' of October 22nd. He found the endosmotic properties of the chloride, bromide, and iodide of potassium to be as follows:—

"Elevation in inches—1st hour: chloride, 1·5; bromide, 5; iodide, 3. 2nd hour: chloride, 4; bromide, 2; iodide, 1." Always the chloride occupies the first position, the bromide the second, and the iodide the third. As the extraordinary confirmation which these results afforded to my conclusions was unknown at the time, and not thought of by Dr. Cogswell, they are the more valuable.

In conclusion, in my work on Scrofula, I say that the merits of cod-liver oil are in all probability "as a tonic, from the resinous principle it contains; by stimulating animal heat; occasionally by acting as an aperient; and also as a deobstruent, more particularly by increasing the quantity of urine."—*Lancet, Nov.* 12, 1853, *p.* 459.

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40.—*On Expectoration as a Means of Diagnosis.* By Dr. Theophilus Thompson, F.R.S., &c.—The most characteristic appearances attending the series of changes of the expectoration in the different stages of pulmonary consumption may be conveniently described under four divisions, namely,

First. The salivary or frothy.

Secondly. The mucous.

Thirdly. The flocculent.

Fourthly. The purulent or porraceous.

The first is what you would expect from irritation; the result either of pulmonary congestion, or of slight tubercular deposit.

The second would indicate a more confirmed affection of the bronchial tubes.

The third is peculiarly characteristic of secretion from a vomica, modified by the absorption of its thinner constituents.

The fourth is indicative of phthisis far advanced, and (if unmixed with froth) usually involving both lungs.—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 190.

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41.—*On the Appearance of the Gums in Consumption.*—Dr. Thompson remarks, "Considerable attention to this inquiry has impressed me with a conviction of the frequent existence, in consumptive subjects, of a mark at the reflected edge of the gums, usually deeper in colour than the adjoining surface, and producing a festooned appearance, by the accuracy with which it corresponds with gingwal boder; this mark is in some persons a mere streak; in others, a margin, sometimes more than a line in breadth. In the most decided cases, this margin is of a vermilion tint, inclining to lake."

[This streak on the gums, Dr. Thompson states, is often among the earliest signs of pulmonary consumption. In reference to the value of this sign as an aid to diagnosis, Dr. Thompson observes :]

"When in either sex it coincides with a pulse not materially altered in frequency by change from the sitting to the standing posture, the presence of phthisis may with high probability be assumed, even before having recourse to auscultation."—*Ibid, p.* 190.

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42.—*On Cocoa-nut Oil as a Substitute for Cod-liver Oil.*—Dr Thompson says, "Among the patients to whom cocoa-nut oil was given, there were some instances of arrested phthisis, as decided as any I have been accustomed to attribute to the use of cod-liver oil, over which it possesses advantages in reference to economy and palatableness; and it is interesting to remark that its efficacy was experienced by some who had previously taken cod oil uselessly, and by others who had discontinued it on account of nausea."—*Ibid, p.* 190.

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43.—*Treatment of the Diarrhœa of Phthisis.*—In the diarrhœa of phthisis, Dr. Thompson employs trisnitrate of bismuth in doses of five grains, combined with three grains of gum arabic and two of magnesia, every four or six hours.—*Ibid, p.* 190.

44.—*On Hemoptysis.*—Dr. T. Thompson "doubts if hemoptysis ever precedes the deposit of tubercle in the lung, and thinks that, in many cases, the local loss of blood may be advantageous to the patient by relieving congestion. He deprecates 'undue haste' in arresting the hemoptysis, and adds, 'as a general rule, it is better to moderate this symptom by producing determination to other organs than to employ direct astringents.'

Should the hemorrhage be passive, and direct astringents be required in consequence of the loss of blood being excessive, alum is, according to our author, one of the best that can be employed; this remedy acts, he says, 'more efficiently when allowed to dissolve in the mouth, than when taken in mixture.' The following is the prescription Dr. Thompson recommends:—

'Take of powdered gum arabic, and of white sugar, each three drachms; powdered tragacanth a drachm and a-half; alum two drachms; catechu three drachms; rose water as much as sufficient for a mass to be formed into sixty lozenges.'

Acetate of lead is preferred to gallic acid, while turpentine is said to be 'one of the most certain and suitable remedies, in a majority of instances.'"—*Ibid, p.* 190.

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45.—*On the Treatment of Colliquative Sweating in Phthisis.* [Dr. T. Thompson says he has given the following preparation in this affection "with the most satisfactory results," viz., oxide of zinc and extract of hyosciamus, of each four grains, to be made into two pills, and taken at bed time.

The following cases by Dr. W. Miller, of Liverpool, illustrate the value of this treatment:]

Sophia, aged 27, married, ill about eight months; has all the symptoms of phthisis well marked, particularly the night perspirations. I directed the above pills, and on the third day the perspirations had entirely ceased, and have not since returned.

Catherine, aged 33, married, ill a long time; complains of profuse night perspirations, which entirely ceased in a few days after commencing the pills, and have not returned.

Fanny, aged 20, unmarried; first seen March 18, 1854; has all the usual symptoms of phthisis. Profuse night perspirations. I prescribed cod-liver oil, half an ounce, three times a day, and zinc and hyosciamus pills at bed time.

March 21st. Is much more comfortable; had very little perspiration last night.

I have given these pills in several other cases; and I think they have the great advantage over other remedies of allaying the night perspirations, and, at the same time, not giving rise to the violent attacks of diarrhœa, which so often come on when the perspirations are subdued.—*Lancet, April* 1, 1854, *p.* 377.

46.—*Use of Lobelia in Asthma.*—The lobelia inflata, a drug much praised and abused by quacks, and somewhat slighted by the profession, is, we observe, in constant use among the out-patients at the City Hospital for Diseases of the Chest. In doses of ten minims three times a day, it appears frequently to produce most admirable effects in cases of chronic bronchitis complicated with tendency to paroxysmal asthma. It is commonly given in conjunction with sedatives, expectorants, or stomachics, often agreeing remarkably well with the latter. Patients taking it frequently complain of much nausea and sense of depression during the half-hour or so following each dose; but it seems, on the whole, to decidedly improve the appetite and digestion. If the nausea be excessive, combination with a few drops of dilute hydrocyanic acid is often useful.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

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47.—*Nervous Asthma.*—M. Morpain, a French physician, has found that by burning brown paper soaked in a solution of saltpetre in the room of an asthmatic patient, the latter will obtain instantaneous relief. M. Carrie, working out this fact, has had the following polypharmaceutical paper prepared for the same purpose:—Pasteboard broken down with hot water, four ounces; nitrate of potash, two ounces; belladonna, stramonium, digitalis, lobelia inflata, all in powder, each twenty grains; myrrh and olibanum, of each two drachms and a half. Incorporate all these with the paste, divide the mass in sheets of the thickness of three lines; dry, and divide in little square pieces. Burn them in little saucers in a well-shut-up room.—*Lancet, Dec.* 31, 1853, *p.* 625.

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48.—*New Respirator.*—Mr. Stenhouse, the Professor of Chemistry at St. Bartholomew's, has invented a new form of respirator, which it is believed will be competent to purify the air breathed through it from all noxious gases. It consists of a layer of charcoal enclosed in fine gause. Should it be found efficient and of convenient use, it will be a great boon to all engaged in occupations which involve exposure to malarious or miasmatic influences.—*Medical Times and Gazette, March* 4, 1854, *p.* 226.

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## DISEASES OF THE ORGANS OF DIGESTION.

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### 49.—ON DEFICIENT SECRETION OF GASTRIC JUICE.—SLOW AND IMPERFECT DIGESTION.

By Dr. George Budd, F.R.S., Professor of Medicine, King's College.

[It must be borne in mind that when the stomach is empty of food, it contains no gastric juice. The secretion takes place when food is brought in contact with its walls.]

The outpouring of the juice when food touches the mucous membrane, like the outpouring of saliva from the presence of food in the mouth, is excited by reflex nervous influence; that is the impression of the food on the surface is transmitted by the nerves to some central part of the nervous system, and thence reflected to excite the action of the secreting apparatus.

This reflex nervous influence, which causes the outpouring of gastric acid on the contact of food with the mucous membrane of the stomach, may be excessive; or it may be excited by other impressions on the mucous membrane of the stomach than those arising from the presence of food; or, lastly, it may be excited by irritation in other organs.

And, on the contrary, when there is food in the stomach and gastric juice is required, the nervous influence exciting the secretion may be deficient in energy, and the juice may be poured out in too small quantity for complete and easy digestion.

Dr. Wilson Philip showed, by various experiments on rabbits and other animals, that if the eighth pair of nerves be divided in the neck, any food which the creatures may afterwards eat usually remains in the stomach undigested; and, after death, the coats are not dissolved by the gastric juice, however long the animal may have lain dead.

The experiments did not warrant the conclusion that Dr. W. Philip drew from them,—that the secretion of gastric juice is entirely dependent on an influence transmitted through these nerves; but they proved that the division of the nerves, and the injury and shock of operation, arrested the secretion for a time.

It is well known that long-continued watchfulness, or excessive fatigue, or great mental excitement, will prevent or take away the feeling of hunger, and destroy for a time the power of digestion.

A man in the wild excitement of delirium tremens has a repugnance for food of every kind. When the delirium subsides, and the nervous system has been refreshed by a few hours' sleep, the appetite and the power of digestion return.

[The depressing passions, fear and anger, lessen the secretion of gastric juice. Sedentary and indolent habits, and the habitual consumption of more food than the system with such habits requires, also produces the same effect.]

It has been clearly shown by the experiments of Spallanzani and Dr. Beaumont, that the quantity of juice required for digestion is proportioned to the quantity of food. When gastric juice has dissolved a certain quantity of food, it is saturated and can dissolve no more. The digestive power may, indeed, be restored, in a certain degree, by the addition of water, or by the addition of muriatic or lactic acid; but to carry digestion much further there must be a fresh quantity of the juice. If, then, a man eats too frequently or too much, the gastric juice may be inadequate for the proper and easy digestion of the food, without any fault fairly attributable to the stomach. The organ is

simply over-taxed. Indigestion, brought on in this way, is the natural penalty for the violation of a natural law, or, as a humorous writer has termed it, "the remorse of a guilty stomach."

In all these ways, gastric juice may be secreted in insufficient quantity for the purpose of digestion.

We may next consider the form of indigestion thus resulting.

A necessary effect of an insufficient secretion of gastric juice is, of course, slowness of digestion. The food, instead of being completely digested, and passing out of the stomach, in two or three hours, remains undigested, or only partially digested, for a much longer time, —it may be, for twelve, or even twenty-four hours. The undigested portions of food remain in the stomach, and, during the slow process of digestion, there is a sense of weight or uneasiness at the pit of the stomach, which gradually lessens, and at length ceases, as the food gets dissslved and passes out of the stomach. If any portions of the food remain solid, there is often, at the end of some hours, when the stomach is getting empty, a distressing feeling of spasm, or cramp, at the pit of the stomach.

If portions of food remain undigested many hours, they irritate the lining membrane of the stomach, and cause headache, a slightly furred tongue, and feelings of general disorder.

The remedies for this habitual slow digestion, in persons otherwise healthy, are to be sought in proper regulation of the diet and habits of life, and in medicines which tend to increase the secretion of gastric juice.

The diet should consist of food easily soluble, the stomach should never be over-loaded, and there should be a sufficient inverval between meals. Care should especially be taken to avoid new bread and tough meat, and not to oppress the stomach by malt liquors, or to indulge in fermented drinks of any kind beyond the point which, from habit or otherwise, the state of the nervous system may require. Bodily fatigue and nervous exhaustion should be avoided, as these states lessen the secretion of gastric juice; but mind and body should be sufficiently exercised. We were intended to be active creatures, and a life of indolence is the infraction of a natural law, which always brings a penalty of some kind or other. A certain amount of bodily exercise and agreeable occupation of the mind, promote digestion, and improve in various ways the general health, and contribute greatly to the preservation of both the bodily and the mental powers.

Various medicines—ipecacuanha, rhubarb, cayenne pepper—taken in small doses, stimulate the lining membrane of the stomach and cause a more abundant outpouring of gastric juice, and may often be taken with advantage just before the principal meals by persons whose digestion is habitually slow. For example, from half a grain to two grains of ipecacuanha and three or four grains of rhubarb, or a grain of capsicum with three or four grains of rhubarb, in a pill, may be taken before dinner, or before breakfast and before dinner.

Salt and mustard have an action on the coats of the stomach of the same kind. A large quantity of salt taken at breakfast will sometimes relieve the headache and much of the other discomfort that follows a debauch. Mustard, as is well known, promotes, with most people, the digestion of beef and other rich meats; and its habitual use will occasionally be found greatly to mitigate the discomfort that results from an habitual slow digestion. White mustard-seed, swallowed whole, was, indeed, some years ago, one of the popular remedies for indigestion; and I have met with more than one instance of aggravated indigestion in which much benefit was attributed to its use. It was given in the dose of a tablespoonful two or three times a day. These stimulants for the stomach—ipecacuanha, salt, mustard—when taken in considerable doses, are all of them powerful emetics. As a remedy for habitual slow digestion, ipecacuanha seems to me to be more effectual than any of the others. The dose of it should, of course, be too small to cause a feeling of nausea.

The uneasiness at the stomach that arises from slow digestion may often be mitigated by drinking a small glass of water, or by eating a lump of sugar an hour or two after meals, or when the uneasiness begins to be felt.

Where digestion is habitually slow and feeble, much benefit of more lasting kind may frequently be derived from the muriatic or the nitro-muriatic acid, taken for some weeks together, half an hour or three parts of an hour before the principal meals.

I need hardly say that, when digestion is slow and feeble, care should be taken not to give at the time of meals, or while digestion is going on, alkalies, the alkaline salts, or other medicines that suspend or enfeeble the action of the gastric juice.

But mere slowness of digestion is not the only ill effect of a scanty or depraved secretion of the gastric juice. It often happens when the stomach is weak and disordered, or when more food is eaten than the healthy stomach can readily master, and especially when at the same time it secretes an unhealthy mucus prone to ferment, that the undigested food in the stomach undergoes putrefactive changes, or some unnatural fermentative process, instead of proper digestion.

One of the most remarkable properties of the gastric juice is that of preventing the putrefaction of meat. Spallanzani first ascertained the fact, that gastric juice not only prevents the putrefaction of meat, but has the power to arrest the process of putrefaction already begun, and even to correct the fetor of meat already tainted. Later physiologists have ascertained that it likewise hinders the lactic, acetic, and alcoholic fermentations, which consequently do not occur in the stomach during healthy digestion.

But if the gastric juice be insufficient in quantity, or faulty in composition, this controlling power may be inadequate to its purpose, and the food in the stomach may undergo some fermentative changes that ought not to take place.

The precise nature and the products of these changes depend on the quality of the food, and on the state of the substance that acts as a ferment. If this substance be decomposing mucus, as Lehmann has suggested that it commonly is, the kind of fermentation will very much depend on the stage of decomposition which this has reached.

In some cases, the food undergoes common putrefactive changes, and sulphuretted hydrogen is evolved. Distension and uneasiness of the stomach come on, with frequent eructation of sulphuretted hydrogen,—belchings as of rotten eggs. This is attended with severe frontal headache—often with a feeling of chilliness—and the other disorder familiarly known as the effects of surfeit. All this disorder is speedily removed when the stomach is emptied by a vomit.

This kind of indigestion is a common effect of over-eating, even in young and healthy persons, and hence is popularly known as "a surfeit." Delicate and growing boys often eat largely from a sense of exhaustion, and soon afterwards engage in active play; the food is undigested, and surfeit occurs. It is more prone to occur in persons with carious teeth, when offensive saliva passes into the stomach.

It frequently occurs too, as we have seen, in cancer of the stomach; where offensive secretions are poured into the stomach; while the food, in consequence of an obstacle in the pyloric orifice of the stomach, or of some impediment to the free action of its muscular fibres, is unduly detained there.

When "a surfeit" occurs in a young and healthy person, the quickest and best way of removing the disorder is to give an emetic, and so free the stomach from the putrefying matter; and afterwards, if need be, to empty the bowels by some quickly-acting purge.

In malignant disease of the stomach, in which this kind of disorder is especially apt to occur, emetics, which irritate the lining membrane of the stomach and may cause violent efforts of vomiting, are unsafe, and an attempt should rather be made to prevent the disorder by proper regulation of the diet. As charcoal has antiseptic properties, toasted bread may be taken instead of plain bread, toast and water instead of plain water, or a small quantity of charcoal in substance may be given.

Should the disorder occur in spite of precautions such as these, the progress of the putrefactive changes may be stayed, and the further evolution of gas be prevented, by small doses of creosote. From half a minim to a minim of creosote is sufficient, and may be given in a pill at the time of meals, or as soon afterwards as the putrefactive changes begin.

It much more commonly happens, when digestion is feeble, that the contents of the stomach undergo some other kind of fermentative process.

If the food have consisted chiefly of vegetables, fruits, new bread, ill-fermented malt liquors, new wines, it has a tendency to pass into a fermentation by which carbonic acid is freely evolved. This causes

great distension of the stomach, and a distressing sense of uneasiness, frequently relieved for the moment by the eructation of inodorous gas —chiefly carbonic acid gas.

If the stomach be emptied by a vomit, the rejected matter is seen to be in a state of active fermentation.

In the case of St. Martin, Dr. Beaumont had an opportunity of witnessing this process in the stomach itself. St. Martin had been in the woods all day, picking wortleberries, and had eaten no other food from seven in the morning to eight in the evening. Dr. Beaumont then looked into the stomach, and found it, to use his own expression, "full of berries and chemifying aliment, frothing and foaming, like fermenting beer or cider."

If food be eaten which is already in a state of fermentation, the fermentative process may continue in the stomach itself. When, for example, new wine is drunk,—wine that is in a state of fermentation,—the fermentation sometimes continues; is, perhaps, even increased by the heat of the stomach; and carbonic acid is evolved very rapidly. The stomach becomes greatly distended, and it is stated that the consequent disorder is sometimes so great as to destroy life. Cattle, when first placed in a field of fresh clover, or other rich pasture, frequently eat more than their stomachs can digest. The vegetable mass ferments in the stomach, as it would at the same temperature out of the body, and carbonic acid and hydrogen (and sometimes hydrogen and sulphuretted hydrogen,) are evolved in great quantity. In consequence of the peculiar structure of the stomach in cattle, these gases cannot escape through the œsophagus, and the stomach becomes enormously distended; in some cases even to bursting.

In man the gas escapes readily through the œsophagus, so that, even when much of it is evolved, the immedaite ill effects of this kind of indigestion are very rarely serious. In the course of a few hours the fermentative process is at an end, and the distension of the stomach subsides.

The cases in which medical advice is most frequently sought are, however, not those where distressing distension and flatulence result from mere over-feeding in healthy persons, but where this kind of indigestion in less degree is habitual, so that uneasiness of the stomach and flatulence are commonly felt an hour or two after the principal meals.

The ill effects of the disorder are, then, not confined to distension and uneasiness of the stomach. The fermentative processes in the stomach give rise to products which, when absorbed into the blood, have an injurious influence on the general health, and the frequent repetition of the indigestion prevents the proper nutrition of the body. The patient is usually depressed in spirits, is less capable than in health of mental exertion, and has lost some of his customary energy and strength. It often happens that oxalic acid is one of the products of the unhealthy digestion, and that crystals of oxalate of lime may

be found in the urine. In many such cases the indigestion itself results from a faulty state of the general health, or from over-work, or depressing influences of other kinds, and the disorder belongs to a class to which I shall call your attention in a future lecture.

When thus arising, the flatulent distension of the stomach may sometimes be prevented by the pills composed of ipecacuanha and rhubarb, or capsicum and rhubarb, of which I have before spoken; but a remedy which succeeds more frequently is the nitro-muriatic acid,—ten minims of each of the dilute acids twice a-day,—taken half an hour, or three-quarters of an hour before the principal meals.

Much good will result, also, from horse-exercise, change of air, and other influences which tend to improve the general health.

The diet should be light and nourishing, and the patient should eat sparingly of succulent vegetables, fruits, and saccharine substances in general, and should carefully abstain from ill-fermented malt liquors.

A more common kind of fermentation in the stomach is the lactic, by which the starchy principles of the food are converted into lactic acid. This kind of fermentation, if fermentation it can rightly be called, is most common in nervous persons with feeble digestion, in whom it not unfrequently happens that acid collects in great quantity in the stomach after meals. They often familiarly tell us, that almost everything they eat turns to an acid. If vomiting occur an hour or two after meals, the matter thrown up is very acid, and, on analysis, the acidity has been often found to be mainly due to lactic acid.

It was supposed by Dr. Prout that much of the lactic acid which collects in the stomach in such cases is derived from the blood, and that it is secreted by the coats of the stomach. Whether this be so or not there can be little doubt that it is often formed in great quantity in the stomach from the starchy principles of the food. It is possible that the secretion of lactic acid by the coats of the stomach may promote the conversion of the saccharine principles of the food into this substance.

This lactic fermentation is not, like the kinds of fermentation of which I have before spoken, attended with evolution of gas. It causes, therefore, not flatulence, but heartburn and pain in the stomach, which is often very severe, and which is sometimes attended with a feeling of constriction, or cramp.

The uneasiness that results from undue acidity thus arising, may be relieved for the time by alkalies, and may often be prevented by giving before meals, medicines which have an astringent or bracing effect on the coats of the stomach—bismuth and magnesia, or, better still, the mineral acids, especially the sulphuric acid.

Lactic acid, out of the body, is apt to undergo another kind of fermentation, which causes the slow evolution of hydrogen and carbonic acid, and which leads to the formation of butyric acid.

There can be little doubt that the same changes occasionally take place within the intestinal canal. Hydrogen is one of the gases that

have been found in the intestines, and now and then the matter vomited by persons of weak digestion has the sour rancid smell of butyric acid.

I have spoken of several kinds of fermentation as if they existed separately; but it very commonly happens, although one kind may predominate, and give a character to the disorder, that these several kinds, and others of which little is known, may go on simultaneously, or rather, perhaps, in quick succession in the stomach, and that various gases, carbonic acid, hydrogen, and sulphuretted hydrogen, and various acids, lactic, butyric, etc. are formed. The consequent disorder is not confined to the stomach. The acid and unnatural products of digestion may pass into the bowels, fret their lining membrane, and excite griping pain and purging; some noxious matters may be absorbed, and cause headache and other disorder; and if the indigestion recur frequently, the general health must suffer.

Severe attacks of vomiting and purging, commonly designated English cholera, seem often the result of fermentation or putrefaction of food in the stomach, by which some highly-irritating matter is formed. If I may judge from my own experience, such attacks generally come on in the evening, soon after dinner, or at night soon after supper, and are much more frequently consequent on a meal of meat or cheese, than on the eating of fruits, to which, perhaps from the greater frequency of the disorder in autumn, they are generally ascribed.

I have found no remedy so effectual in checking the disorder as pills composed of creosote and opium.

Our knowledge of the various kinds of fermentation is still very imperfect. As it becomes more extensive and exact, our knowledge of various forms of indigestion will, doubtless, become more precise, and our power of relieving them greater than it now is.—*Med. Times and Gazette, Jan.* 28, 1854, *p.* 77.

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## 50.—ON INDIGESTION ARISING FROM DEFECTIVE ACTION OF ONE OF THE EXCRETING ORGANS.

By Dr. George Budd, F.R.S., &c.

[The state of the nervous system not only influences the action of the stomach, but it is also affected by the condition of the blood, because from the blood are derived the secretions which assist in digestion.]

The stomach is in more direct relation with the liver than with any other important excreting gland. The stomach and the liver are parts of the same great apparatus, whose office it is to supply from the crude matters taken as food, fit material for the sustenance of the body. The action of the one organ is in some degree complemental to that of the other. Dr. Prout long ago advanced the opinion, that the muriatic acid of the gastric juice is furnished by the decomposition of

chloride of sodium or common salt, and that the soda thus set free in the blood is eliminated with the bile. He was early led to the opinion, which the researches of Matteucci, Liebig, and others, tend in some measure to support, that the principal digestive organs constitute a kind of galvanic apparatus, of which the mucous membrane of the stomach may be considered the acid, or positive pole, and the hepatic system the alkaline, or negative pole.

Dr. Bence Jones has lately shown, that soon after meals, when the stomach secretes a large quantity of muriatic acid, the urine has a tendency to become alkaline; and that the soda set free on the decomposition of the chloride of sodium which furnishes the muriatic acid of the gastric juice, instead of being all eliminated by the liver, as Prout seems to have supposed, is in part eliminated by the kidneys. Other observers have shown that, when the stomach is pouring out a large quantity of acid, the alkalinity of the saliva likewise increases; and, since the increased alkalinity of the urine and saliva at such times results from the increased quantity of free soda in the blood, it is probable that the same law holds for all other secretions of which soda is an essential constituent. But still there is reason to believe that the opinion advanced by Prout is in part true, and that an intimate relation—and one, probably, of the kind which Prout supposed—exists between the secreting functions of the stomach and the liver.

If the secretion of the liver be defective in consequence of deficient power in the organ, or in consequence of the congestion of it that results from high living and indolent habits, the functions of the stomach are almost invariably disordered, and, in conjunction with a slight yellow tinge in the conjunctiva and skin, there is a coated tongue, an impaired appetite, nausea and especial disrelish of rich dishes, constipation: and often, with this defective action of the stomach and liver, there is disturbed or unrefreshing sleep, and great depression of spirits.

The remedies for this condition are, a light and simple diet, with water for drink; fresh air; exercise, to promote perspiration, without fatigue; and medicines that increase the secretions of the liver, bowels, and kidney. A moderate dose of blue pill, repeated two or three times on alternate nights, and a drachm of sulphate of magnesia in infusion of senna every morning, answers well for persons strong enough to bear it. To others, fifteen grains of sesquicarbonate of soda, twice a-day, with enough of the potassio-tartrate of soda to act gently on the bowels, or some other medicine of similar action, may be given with benefit.

Again, when the kidneys imperfectly perform their office, so that urea and other constituents of the urine contaminate the blood, the functions of the stomach are generally more or less disordered.

This is especially seen in advanced stages of Bright's disease, when the kidneys are atrophied. The prominent symptom of the stomach disorder in such cases is nausea or vomiting. The vomiting is sometimes so frequent as greatly to interfere with nutrition, and is the only

disorder of stomach complained of. In other cases, the ordinary effects of slow and feeble digestion—a sense of weight and oppression after meals, with flatulent distension of the stomach, or undue acidity—co-exist with the nausea or vomiting; and sometimes these effects of slow and feeble digestion exist alone.

In chronic granular disease of the kidneys there are several conditions which tend to disorder the functions of the stomach.

First, there is, perhaps, in many cases, as when the kidney is irritated by a calculus, a purely nervous influence starting from the kidney, which is reflected upon the stomach, and tends to derange it.

In the next place, the gastric juice becomes vitiated by admixture with urea, and probably with other hurtful excrementitious matters. The mucous membrane of the stomach must, as I have before observed, be regarded as an expanded gland, destined to furnish abundant secretions, and, by virtue of its active secreting function, occasionally instrumental in eliminating noxious principles from the blood. It has been found, indeed, on chemical analysis, that, in malignant cholera, and in those diseases of the kidneys in which the secretion of urine is very defective, the matters vomited contain urea, or the muriate or carbonate of ammonia derived from the decomposition of it.

The elimination of these foreign matters, or the reflex nervous influence, may, moreover, excite the secretion of gastric acid when there is no food in the stomach to dissolve; or may cause congestion of the stomach, and thus lessen the supply of gastric juice; or may lead, directly or indirectly, to an inflammatory condition of its lining membrane, and so not only lessen the supply of gastric juice, but also cause a secretion of unhealthy mucus, which, from its proneness to ferment, is an additional source of gastric disorder.

I have already observed, when speaking of the effects of arsenic, that a stomach-disorder caused by some noxious matter in the blood is apt, if it exceed certain limits, to be followed by an analogous disorder of the bowels. The cause of disturbance acts alike, though in different degrees, on the different parts of the intestinal canal. An illustration of this is seen in granular disease of the kidney, in which diarrhœa not unfrequently co-exists or alternates with the gastric disorder, and in which the matters voided by the bowels, as well as those ejected from the stomach, have been found to contain urea.

In granular disease of the kidney, the blood is always impoverished, and there is a source of further exhaustion in the abiding drainage of albumen from the system. It is very important, therefore, to remedy the disorder of digestion, and, so, in the greatest possible extent, to supply the waste. Not unfrequently, indeed, more relief can be given by remedying the stomach disorder than by any measures in our power that directly affect the kidney itself.

The vomiting or nausea may generally be controlled by the dilute hydrocyanic acid, which may be given in doses of four or five minims

three times a day, and which may be conjoined with small doses of potash or soda, if any indications of undue acidity likewise exist.

Another remedy, very effectual in controlling the vomiting, is creosote, of which a minim or less may be given, in a bread-pill, three times a-day, before meals.

If these means should fail, the vomiting and much of the associated gastric disorder may often be stopped for a time by a few purgative doses of cream of tartar and jalap, which probably relieve the stomach by causing a more abundant elimination of the noxious matter by the bowels. This medicine is best given, as are most others of similar action, in a single dose sufficient for the desired object, in the morning, before breakfast, since it will then, in addition to the drain it causes from the mucous membrane, only sweep away the refuse of digestion whereas if it be given at other times or in repeated doses during the day, it sweeps away food that has been more or less digested, but the nutritious elements of which have not been absorbed.

I need hardly remark, that when such impediments to healthy digestion exist, very great care should be taken in diet. If the food be hard of digestion, or if more be eaten than the stomach can easily dissolve, it not only oppresses the stomach and causes much temporary discomfort, but may excite an inflammatory condition of the mucous membrane, and thus still further weaken the digestive power.

The blood may be rendered impure and the stomach be deranged, not only by defective action of the great excreting organs, but also from fault in the processes concerned in the waste and repair of the tissues in other parts of the body. The blood is the storehouse from which the different textures of the body draw the materials for their nourishment and growth. Physiology teaches us that the organic constituents of most of the textures of the body are being constantly renewed—that as time flows on, although the form remains nearly the same, the matter is changed. Every exercise of power causes an expenditure of the substance of the organ that ministers to it. Some constituent of the organ is resolved into simpler chemical compounds, which are then given back to the blood, and the blood furnishes to the organ fresh materials to supply the waste. There is thus a constant interchange between the blood and the tissues; the organic constituents of the tissues waste—are resolved, that is, into simpler chemical combinations,—and are then absorbed into the blood, and thrown off by the different excreting organs; and the elements of the tissues thus taken away are reconstructed out of fresh materials supplied by the blood. These processes of waste and repair are what have been termed the processes of secondary assimilation. It is essential to the purity of the blood that they be rightly performed. There are several ways in which they may be deranged. The expenditure of power may be too great, the tissues may waste too rapidly, and thus more effete matter may pass into the blood than the excreting organs can remove; or without this, either in the waste or in the reconstruction of the tissues,

some substances may be formed, and may pass into the blood, which are difficult of excretion, or which disorder the action of other organs.

It was Dr. Prout who fixed our attention on this great class of disorders—disorders not depending on any visible structural change, but on some fault in those subtle processes that minister to nutrition. There are, doubtless, more disorders of this class than we have yet distinguished. They all lead to an unnatural state of the blood, from the excess of effete matter or from the presence of some unnatural and injurious principle in it; and often this leads again to an unnatural state of the urine—the great drain through which the soluble effete matters of the body are cast off.

These states of faulty assimilation are then, in some instances, revealed to us by the condition of the urine.

One of the most important of them, as far as digestion is concerned, is that characterised by the formation of lithic acid in undue quantity, and in which an excess of this substance exists habitually or frequently in the urine.

This particular derangement of the nutritive processes often has its origin, as you know, in a peculiarity of constitution—the so-called lithic diathesis—which is permanent, and which is especially frequent in the members of gouty families and in persons of middle age who lead the kind of life that conduces to gout; who eat, that is, large quantities of animal food, and drink freely of malt liquors.

In such persons, occasional indigestion is very common—indigestion marked chiefly by excessive acidity of the stomach and heartburn, and by the condition of the urine, which contains a sediment of lithate of ammonia or lithic acid gravel, or which, without this, is high coloured, and more than commonly acid. With this acid indigestion there is often insufficient action of the liver, a bilious tinge in the complexion, costive bowels, a coated tongue, which sometimes dries at night, and heavy or disturbed and unrefreshing sleep.

In this form of indigestion, much relief is given by alkalies, which neutralise the excess of acid in the stomach when digestion is over, and thus stop or prevent the uneasy sensations to which it gives rise. The soluble alkalies do good also, and more permanent good, by promoting the secretion of the liver and the kidneys. The bicarbonate of soda and the bicarbonate of potash are, in most instances, the best forms in which these can be given, and the best time for giving them, as was pointed out by Dr. Prout, is two or three hours after the principal meals. Fifteen grains of either, two or three times a-day, is, in most cases, a sufficient dose; and, if there be a sense of heat in the stomach, this may be conjoined, as Prout recommended, with a few grains of nitre.

At the same time, a few doses of blue pill may be given on alternate nights, further to promote the secretion of the liver, and colocynth, or colocynth with henbane, to keep up free action of the bowels.

The use of the alkalies should be continued for some weeks, and, if any gouty symptoms exist, ā grain of acetous extract of colchicum may be given at night.

Persons who suffer from this kind of indigestion should endeavour to promote the action of the lungs and the skin, and, with this object, should take active exercise, be much in open air, and sleep in an airy bed-room; and they should live on a simple and abstemious diet—not eating too largely of animal food, and carefully avoiding ill-fermented malt liquors, rich dishes, heavy pastry, and cheese. Where total abstinence is not feasible, the alcoholic drinks best suited to them are pale sherry, in small quantity, or brandy, largely diluted with water.

By such means the indigestion may often be stopped, the excessive acidity of the urine corrected, and the general health greatly improved; but the disorders have their origin in a peculiarity which is constitutional and abiding, and they are, therefore, very liable to recur.

Another faulty state of the general health attended with indigestion is now and then met with, in which the urine is apt to contain oxalic acid in considerable quantity, and to precipitate, on standing, the well-known octohedral crystals of oxalate of lime.

Dr. Prout supposed that a more than common disposition to the formation of oxalic acid in the system is indicative of a peculiarity of constitution; and he expressed this supposed peculiarity by the term, *oxalic diathesis.*

Oxalic acid, which is composed of only carbon and oxygen, with the elements of water, and which exists in many plants, and may be readily formed by the oxidation of various animal and vegetable substances, may come to be present in the urine in several ways.

1st. It may be taken in the food; may escape conversion in the stomach, and after its absorption in the blood; and may thus pass off in the urine, in combination with lime.

Many vegetables contain oxalic acid in combination with alkalies or with lime. The stalks of rhubarb, which are largely eaten in this country in the spring in tarts, and sorrel, which is much used abroad as salad, contain it in considerable quantity in combination with alkalies. In some persons, the oxalic acid taken in these articles of food is changed in the process of digestion, or undergoes conversion in the blood by the influence of oxygen, and consequently, does not pass off, as oxalic acid, in the urine. In others, whose power of digestion is weaker, or in whom respiration is less active, the oxalic acid escapes conversion and passes off in the urine in combination with lime.

This may happen in persons who are in perfect health and who have no marked tendency in the formation of oxalic acid in the system. With this occasional, and, if we may so term it *accidental* presence of oxalic acid in the urine, we have nothing here to do. It may lead to the formation of a small calculus of oxalate of lime, and so have very serious results; but it does not denote any abiding disorder of digestion or nutrition.

2nd. Oxalic acid may be formed in the body, and, as Dr. Garrod has shown, its presence may be detected in the blood when none of it is taken in the food.

The oxalic acid which is formed in the body may, possibly, be derived immediately from the saccharine elements of the food, or from lithic acid and other substances that result from the waste of the tissues, or from both these sources at once.

We know, indeed, that out of the body, oxalic acid may be readily formed, under the influence of oxidising agents, from sugar, starch, and their chemical equivalents; and Liebig and Wohler have shown that it may also be readily formed from lithic acid.

Dr. Prout long ago inferred that oxalic acid might be derived from the waste of the tissues, from the fact that its habitual or frequent presence in considerable quantity in the urine is often associated with an unhealthy condition of the skin, and also from the fact, that, in rheumatic and in hectic fever, large quantities of another non-nitrogenous acid—lactic acid—which must, he imagined, have their source in waste of the tissues, are formed or set free in the body.

Oxalic acid is said to be constantly present in the urine of herbivorous animals, and, according to Lehmann, it often exists in the urine of men in perfect health, but in such minute quantity that it is not readily discovered. It may then, he says, be sometimes made apparent by freezing the urine. When urine is frozen, a great part of the water crystallises in a comparatively pure state, and, if this be removed, the concentrated urine that remains deposits crystals of oxalate of lime.

The quantity of oxalic acid is found to be increased, so that the urine, without any such concentration, deposits numerous crystals of oxalate of lime, under many circumstances;—

1. It is increased, according to Lehmann, by emphysema of the lungs, by the diminished elasticity of the lungs that results from repeated attacks of catarrh, and by other conditions that impede respiration, and thus prevent perfect oxidation of the carbon, which passes off in the urine as oxalic acid, instead of escaping in the form of carbonic acid by the lungs.

It is also increased according to him, by drinks that contain much carbonic acid, and by the alkaline bicarbonates and vegetable salts; and he accounts for this increase by supposing that the superfluous carbonic acid which has entered the blood or been generated there from the salts of the vegetable acids, must obstruct the absorption of oxygen and impede the perfect oxidation of those substances in the blood which support respiration.

2. The quantity of oxalic acid in the urine is often increased, as Dr. Walshe has shown, during convalescence from typhus fever, rheumatic fever, and other acute diseases, in states of anæmia, and in the course of many chronic diseases that interfere with nutrition.

3. A considerable deposit of oxalate of lime often exists in the urine of persons who have no appreciable disease of the lung or other organs, and who have had no positive illness, but who have disordered digestion and look and feel out of condition. As the general health improves, the oxalate of lime disappears from the urine; but under the influence of fatigue and many other conditions unfavourable to health, the indigestion and other ailments recur, and the oxalate of lime appears again.

Dr. Prout, observing an especial tendency to this kind of disorder in certain persons and certain families, and believing that diabetes, which he considered on chemical grounds to be a kindred malady, was constitutional, and to a certain extent hereditary, was led to suppose that the especial tendency to the formation of oxalic acid and the concomitant disorder of health had its origin in a peculiarity of constitution, and, as I have already mentioned, he designated this supposed peculiar constitution the oxalic diathesis. There is, however, no constant connexion between the disordered state of health and the presence of oxalate of lime in the urine.

A copious deposit of oxalate of lime may result from other conditions, and the ailments we are considering may exist without the oxalate. Very often, however, the ailments and the oxalate co-exist, and constitute and define a disorder which it is very important to recognise, because experience has shown that it can generally be controlled or much mitigated by a particular plan of treatment.

To the patient nothing seems amiss in the urine. He complains only of his indigestion and its accompanying ailments. It is the form of this indigestion that we have now to consider.

It presents no striking or distinctive characters. The appetite is often good, sometimes more craving than in health; digestion is not slower than it should be; there is no pain, no sense of oppression or weight at the stomach immediately after meals; there is seldom vomiting or heartburn. But much discomfort is caused by flatulent distension of the stomach especially two or three hours after a meal, when the stomach is getting empty, and sometimes there is pain in the stomach at that time. With this flatulent distension of the stomach there are often uneasy sensations in the belly which seem to result from flatulent distension of the duodenum or the colon.

This disorder of digestion is usually associated with other symptoms of constitutional disorder, and especially with nervous symptoms. The patient in most cases grows somewhat thinner, is weak and readily fatigued, sleeps badly, is troubled with palpitation, is irritable in temper and depressed in spirits, and often hypochondriacal in a high degree, and has, or fancies he has, deficiency of sexual power. Frequently, too, he has a wearing pain, or a sensation of uneasiness across the loins, and empties his bladder more frequently than in health,—symptoms resulting probably from irritation of the urinary organs by the passage of the oxalic acid through them.

In some cases there is evidence of defective or faulty nutrition of the skin in a scaly eruption or a succession of boils.

These ailments vary greatly in degree in different cases. In some, they are very trifling; in others, the restlessness at night and the mental depression unfit the patient for his usual occupations, and render his life miserable. They are none of them peculiar to the disorder we are considering. Taken together, indeed, they often form a group that is tolerably significant; but the only sure evidence that oxalic acid is in excess is the presence of numerous crystals of oxalate of lime in the urine.

The urine then is always acid, generally more acid than in health; in most cases of an amber colour and transparent, and of moderate or rather high specific gravity. If allowed to stand in a conical glass vessel, a light cloud of mucus may form at the bottom, but there is often no other deposit.

In some cases, however, together with oxalate of lime, the urine contains an excess of urea and is of higher specific gravity than in health; or it contains an excess of lithic acid, or of lithate of ammonia, and these substances are deposited at the bottom of the glass.

The crystals of oxalate of lime are not visible to the naked eye, except when many of them are entangled in a dense cloud of mucus at the bottom of the glass, in which case they can sometimes be seen as minute glistening points: but may, as Dr. Golding Bird, first showed us, in all cases, be readily discovered by the help of the microscope. The detection of them is important, because it throws light on the nature of the disorder and may determine the plan of treatment.

A disposition to such recurring derangements of the general health, and to the formation of oxalic acid in the system, may—like the disposition to gout, diabetes, and other kinds of faulty assimilation—either be inherited, or be induced, where no inherited tendency to it exists, by certain external conditions or habits of life.

The conditions which Dr. Prout assigned as most conducive to it, are—residence in a damp or malarious district, the too abundant consumption of sugar, the depressing emotions of anxiety and grief, exhausting bodily or mental labour, long courses of mercury, excessive smoking, and, indeed, all other circumstances that seriously depress the vital powers.

Among the inhabitants of this great city, there are, I believe, no circumstances that conduce to it so much as the foulness of the air we are always breathing, and the anxiety and exhausting labour of mind and body that are almost inseparable from the pursuit of wealth or distinction.

Now, all these conditions, by their action on the nervous system, enfeeble respiration; and it seems probable that, as Lehmann has suggested, the formation of oxalic acid may be immediately owing to defective oxidation of those materials in the blood by which respiration is supported: but in the cases we are considering, it is not the

less dependent on derangement of the general health, which is apt to recur, and which constitutes a definite object of medical treatment. In some cases, it seems, from the high specific gravity of the urine and from the large quantity of urea that co-exists with the oxalate of lime, that there is a more rapid waste of the tissues than is natural, and that the respiration is not absolutely, but only relatively defective—insufficient, that is, for the complete oxidation of the large quantity of combustible materials on which the inspired oxygen acts.

The indigestion, and the various other ailments that result from this general derangement of health, are much under control.

The remedy of most efficacy, where the urine is free from a red deposit, is the nitro-muriatic acid, which often prevents the formation of oxalic acid after a few days, lessens the flatulence and the palpitation, and makes the sleep quiet and the spirits more cheerful. From eight to twenty minims of each of the dilute acids may be given twice a-day in a glass of water, half an hour before breakfast and half an hour before dinner.

It was long ago known that nitric acid, or the nitric and muriatic acids, have occasionally great efficacy in indigestion; but it was Dr. Prout who rendered our knowledge on this point precise, and showed that it is in the particular form of indigestion we are considering, and in persons in whom there is a disposition to the formation of oxalate of lime in the urine, that they are especially of service.

The mineral acids have a tendency to cause a deposit of lithic acid, or of lithate of ammonia, in the urine, and when such a deposit exists, it is seldom advisable to give them longer. Dr. Prout tells us, that, when his patient lived at a distance in the country, he commonly advised him to take the acids for a month or until lithic acid or lithate of ammonia appeared in the urine.

All ailments that result from faulty assimilation and that depend primarily on peculiarity of frame or constitution, are very liable to recur. If, therefore, the mineral acids should prove of service, they may be had recourse to again and again on each recurrence of the same disorder.

If the tongue be clean, some of the light bitter tonics may be given with advantage in conjunction with the mineral acids.

When the urine from the first has a deposit of lithic acid or lithate of ammonia, the mineral acids should not be given, and the best substitute for them that I know of is the carbonate or the aromatic spirit of ammonia.

Where there is want of sleep, and great nervous irritability, and much flatulence and palpitation, the tincture of henbane, or the dilute hydrocyanic acid, or some other sedative, may be given with advantage in conjunction with either of the medicines I have just mentioned.

So much for remedies which the Pharmacopœia supplies.

The proper regulation of the diet is equally important. Dr. Prout, considering the excessive use of sugar as one of the causes of this

disorder of health, laid it down as a rule, that saccharine articles of food, and particularly *sugar*, should, as much as possible, be avoided; and that the diet should consist chiefly of animal food, and the stronger farinaceous matters.

He advised also, that the patient should abstain as much as possible from alcoholic drinks, and that, when he cannot abstain entirely, he should select in preference to others, sherry, or brandy, properly diluted with water. In some cases, however, these are too heating, and sound malt liquor, or hock, or claret, may be substituted for them.

Many years have elapsed since these injunctions were made, and the wisdom of them, as general rules, has been fully established.

It is very important, also, that the patient should change for a time his habits of life. If he is an inhabitant of a large city, and exhausts himself with mental or bodily labour, country air, rest, and recreation, are often sufficient of themselves to restore the health.—*Med. Times and Gazette, Feb.* 25, 1854, *p.* 177.

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## 51.—ON THE REMEDIES FOR INDIGESTION.

By Dr. George Budd, F.R.S., &c.

[Dr. Budd gives us some very good hints on the different medicines used in cases of dyspepsia; and first, on the use of

*Ipecacuanha.*—This medicine *increases the secretions* of the stomach, and is to be taken before meals in cases of slow digestion. Daubenton was one of the first to point this out.]

Daubenton is careful in stating that the cases in which ipecacuanha is useful are where digestion is slow,—where the food lies heavy on the stomach, and there is an inability for mental or bodily exertion for some time after meals,—a kind of disorder which is, he states, especially common in men of middle age, or beyond it, who lead sedentary lives.

He believed that ipecacuanha owes its efficacy in such cases to its exciting peristaltic action in the stomach, and imparting an energy to its glands.

He recommends that it should be given in the morning fasting, and in quantity sufficient to occasion a slight feeling of vermiculating motion in the stomach, but without causing any sensation of pain or nausea. The quantity requisite to produce this effect varies, he says, in different persons, from a quarter of a grain to two grains. He advises, therefore, that very small doses be given at first, which may be gradually increased till a sensible effect is produced.

[Dr. Budd then gives us his own experience. He says:]

I have used ipecacuanha as a remedy for indigestion for several years, and believe that there is no other medicine we know of so

effectual in removing the uneasiness and sense of oppression after meals, and the various other evils that result from slow digestion.

Small doses of rhubarb, ginger, and pepper, have a similar kind of action, and may be given singly or together for the same purpose. I generally prescribe ipecacuanha, from half a grain to a grain, in a pill, with three or four grains of rhubarb. With many, a favourite remedy for the discomfort resulting from slow digestion is a grain of cayenne pepper, with three or four grains of rhubarb. The best time for giving medicines for the purpose in question is just before dinner, and before any other meal after which a sense of oppression is usually felt.

[*Bismuth.*—This medicine is useful in *painful digestion*, accompanied with cramp or violent pain in the stomach after meals.]

It is often of signal service, as Odier remarked, in the functional disorders of the stomach that are so common in women who are ill fed and overworked, or exhausted in any other way, and especially where the stomach is very irritable, so that pain and vomiting occur soon after meals.

It is an efficient remedy when pain in the stomach, with increased secretion of gastric acid, occur from tuberculous disease of the lung, or from some irritation elsewhere; and in infants, where this kind of disorder, with exhausting diarrhœa, results from the irritation of teething, or from improper food, or from the change of diet on weaning.

Against the pain in the stomach and vomiting, that result from simple ulcer and other forms of organic disease, it is only of use occasionally when the stomach secretes an unhealthy mucous, or when there is an excessive or untimely secretion of gastric juice.

It is of little use in the indigestion that depends on gout, and that occurs in well-fed and plethoric men.

It is of no use in the uneasiness of the stomach, of which I have before spoken, that results from slowness of digestion or a scanty secretion of gastric juice.

Bismuth, as applied to the stomach, was considered by Odier an *antispasmodic*. The action it exerts seems to be confined to the mucous membrane with which it is brought into contact, and to be a *surface* action. It restrains undue secretion, and has a sedative influence on the stomach, probably by its direct action on the coats of the stomach, as well as by preventing the outpouring of irritating secretions.

It is best given, suspended in water, a short time before meals. Ten grains, three times a day, is, in most cases, an efficient dose; but it may be given, as Odier discovered, in much larger quantity, without any ill effects. It is soothing, rather than irritating, to the mucous membrane over which it passes; and, from being of such sparing solubility, has little effect elsewhere, except what it has indirectly from the action it exerts on the stomach. It has, indeed, of late, been recommended by more than one writer to be given by drachms rather than grains.

Bismuth may often be given with advantage with other medicines,—with opium, or magnesia, or chalk,—which allay pain or neutralise an excess of acid, or restrain undue secretion.

*Chalk*, and the *vegetable astringents*,—kino, catechu, krameria, and logwood,—are generally given to restrain diarrhœa. It does not seem to be generally known, that they are just as effectual, perhaps more effectual, in restraining undue secretion from the stomach.

Chalk, like bismuth, from its sparing solubility, has little direct action, except on the mucous membrane over which it passes. The vegetable astringents have a more remote astringent influence. This is clearly seen in the colliquative stage of phthisis; where, besides restraining the diarrhœa, and stopping the vomiting with increased secretion of gastric acid that often occurs in this state, they restrain, often in a very striking degree, the profuse sweating.

They seem all to have much the same effect. I generally give the preference to krameria and logwood. Kino is not conveniently given in solution; and catechu is not only very nauseous, but, from being much used in the arts, is often of inferior quality. The most grateful to the taste is krameria; the most effectual, I believe, is logwood. Logwood has a mawkish taste, which is best corrected by cinnamon.

An ounce of logwood shavings, and a drachm of powdered cinnamon, may be infused for four hours in ten ounces of boiling water, and then strained. An ounce and a half of the strained infusion may be given two or three times a-day, a short time before meals.

[*Hydrocyanic acid*, is also used when there is *pain* in the stomach, or *vomiting*, but must not be given when inflammation or ulceration are suspected.]

It is of most service in the gastralgia, and in the sympathetic vomiting, that occur in nervous persons from irritation elsewhere, without inflammation or ulceration of the coats of the stomach, and without undue secretion of gastric acid.

Given alone, or in conjunction with soda, it is the most effectual remedy we know of for the gastralgia that is apt to occur when the stomach is empty of food in nervous persons who have been subjected to exhausting influences; and for the vomiting that results from granular disease of the kidney.

It is of no use when pain or vomiting result from an inflammatory condition of the stomach.

It aggravates pain and vomiting when these symptoms are caused by an ulcer, or when they depend on excessive or untimely secretion of gastric acid. It often, for example, increases the vomiting that occurs in phthisis, which alkalies and the vegetable astringents will prevent.

When there is undue acidity of the stomach, it may, however, often be given with advantage in conjunction with soda or potash, when it would not be of service if given alone. The alkalies neutralise the

excess of acid, and the sedative influence of the hydrocyanic acid is is then exerted.

[*Alkalies* and *mineral acids* are also very useful in particular kinds of indigestion. But these are so well known that we need not here recapitulate their uses.]—*Med. Times and Gaz., April* 15, 1854, *p.* 365.

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52.—*Treatmemt of Urticaria.* By Dr. G. Budd, F. R.S.—When nettle-rash is brought on by eating some substance in common use, and recurs frequently, the offending substance may sometimes be detected by the plan followed by Willan. He says: "I have desired several persons affected with chronic urticaria to omit first one and then another accustomed article of food or drink, and have thus been frequently able to trace the cause of the symptoms. This appeared to be very different in different persons. In some, it was malt-liquor; in others spirit, or spirit and water; in some white wine, in others vinegar; in some fruit, in others sugar; in some fish, in others unprepared vegetables. I must, however, confess, that several cases have occurred to me where a total alteration of diet did not produce the least alleviation of the complaint."

It sometimes happens that a nettle-rash resulting from defective digestion is brought on not merely by some one substance, but by several substances in common use; and it is then very difficult to detect the offending substances or to prevent the disorder by any restriction of diet to which the patient will submit.

In such cases, the disorder may sometimes be prevented by giving daily, immediately before dinner, or before breakfast and before dinner, a pill containing three or four grains of rhubarb; or what is still more effectual, three or four grains of rhubarb, and from half a grain to a grain and a-half of the powder of ipecacuanha.

I several years ago learnt the occasional efficacy of rhubarb given at such times, from a lady, who told me that she was harassed by frequently recurring nettle-rash for many years, and consulted many physicians, and tried various remedies in vain, until some person who had suffered in the same way advised her to eat a few grains of rhubarb every day, just before breakfast and just before dinner. She followed the advice, and was freed from the nettle-rash. After some time she left off the rhubarb, and the nettle-rash returned. She took the rhubarb again, and the nettle-rash again disappeared. This experiment she often repeated at distant intervals, and always with the same result. When she gave me this account she had continued the practice of thus eating rhubarb for several years, with the occasional intermission of a few days, by way of experiment. She had a persuasion that if she then left off the rhubarb, the nettle-rash would recur.

Small doses of rhubarb and ipecacuanha are, as I have before observed, often of service where, from slowness of digestion, a sense of weight and oppression at the stomach is felt for some hours after

meals, and seem to quicken and strengthen digestion by increasing the flow of the gastric juice.

While taking these medicines, the patient should endeavour to strengthen digestion by exercise and fresh air; should be careful not to eat too much at a time, or too often; and should live on a very simple diet—avoiding spirits, and cheese, and pastry, and undressed vegetables, and, in particular, those substances which have an especial tendency to bring on nettle-rash.

It sometimes happens, especially in women, that the nettle-rash though depending immediately on the stomach, occurs only when digestion is weakened by over-fatigue, or by anxiety or some other mental emotion, or by profuse monthly discharges, and that remedies of a different class are availing.

In some such cases, where all the means of which I have before spoken had failed, I have known the eruption disappear under the use of carbonate of ammonia, alone or in conjunction with tincture of gentian.

Serpentaria is another remedy that has obtained some repute in the treatment of this disorder, but I have never made trial of it.

I may as well observe here, that an excellent application for allaying the irritation of nettle-rash, whatever be its cause, is a lotion made by mixing ℥ss. of acetate of lead and ℥ss. of tincture of opium with ℥viij. of water.—*Medical Times and Gazette, March* 18, 1854, *p.* 258.

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53.—*Treatment of Pyrosis.* By Dr. G. Budd, F.R.S.—In the treatment of water-brash, our first endeavour should, of course, be to remove the conditions that may seem to have brought it on or to maintain it.

If the disorder should seem to be caused mainly by a diet not sufficiently nutritious or consisting too much of farinaceous substances, the most effectual remedy will be a wholesome nourishing diet, containing a proper quantity of animal food *in its most digestible form.* Little permanent benefit can, indeed, be expected from medicine unless the diet is improved.

If the disorder should seem to have been induced, or to be kept up, wholly or in part, by fatigue, it is very essential that the patient should rest; if by constipation, that this condition should be removed by purgatives, such as aloes or colocynth, that do not offend the stomach.

After these points have been attended to, much further good may be done by medicines.

The medicines that have been found most useful in pyrosis are—

1st. Medicines which have an astringent action on the coats of the stomach. Among these may be classed bismuth, lime-water, and the vegetable astringents—kino, catechu, krameria, logwood.

2nd. Sedatives, especially opium and the salts of morphia, which probably also tend to restrain undue secretion by the mucous membrane, but which are chiefly of use in allaying the gastralgia that attends pyrosis.

Medicines from these two classes may often be combined with advantage. Five grains of bismuth with a twelfth of a grain of the muriate of morphia, or five grains of the compound kino powder, or an efficient dose of catechu, krameria, or logwood, with opium, may be given two or three times a-day.

3rd. Some other medicines have obtained repute in pyrosis which cannot be classed with the preceding. They have most of them an astringent action on the coats of the stomach, but act, directly or indirectly, on the nervous system as well.

The chief of these are, nitrate of silver, which may be given in pill, in doses of half-a-grain three times a-day; nux vomica, which may also be given in pill, in the dose of from three to five grains, three times a-day; quinine; and the mineral acids.

Some of the medicines I have mentioned have been popular remedies for pyrosis in districts in which the malady has prevailed.

It is stated that nux vomica is a popular remedy among the Laplanders, to whom it was recommended by Linnæus, and that lime-water was some years ago a popular remedy among the rural population of North Wales.

4th. The disorder is often connected with anemia, and steal is of great service both in removing it and in preventing its recurrence.

The medicines of which I have had most experience in disorders of this class, and which are probably as efficacious as any, are bismuth, with morphia; krameria, and logwood, with opium; and steel.—*Medical Times and Gazette, March* 18, 1854, *p.* 260.

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## 54.—ON FERMENTATION IN THE CONTENTS OF THE STOMACH, WITH DEVELOPMENT OF SARCINÆ.

By Dr. George Budd, F.R.S.

[Sarcinæ ventriculi are peculiar bodies produced by a particular kind of fermentation of the contents of the stomach.]

These bodies were first discovered by Mr. John Goodsir, in 1842, in a case of which he has given the following account:—

"Mr. ——, aged 19, consulted me about a stomach complaint, under which he had been labouring for four months, and which had more or less resisted every attempt made for its removal. He informed me that he considered it to be water-brash; that it attacked him on awaking in the morning with a feeling of distension of the stomach; that, without any effort of vomiting, a quantity of fluid, varying in volume from two-thirds to a whole wash-hand basinful, passed up from his stomach; that, after this he was quite relieved, and experienced no

further inconvenience till the evening of the same day, when, without decided distension, sounds as of a fluid boiling or bubbling, and proceeding from the region of his stomach, were perceptible to himself and to those around him; that he slept well enough, but was generally attacked in the usual manner next morning. Such was my patient's own account of his case.

"On examining more particularly into the symptoms, I could ascertain nothing positive. His tongue and pulse were natural; he had no headache, nausea, or thirst; no tumour could be detected in the epigastrium, and no pain on pressure was complained of in the region of the stomach. The bowels were moved daily, and the stools were normal. His appetite was not affected, and the usual articles of diet appeared to agree with him. He was thin, but had a good complexion, and his flesh was firm. He stated that he had been very fat, but that this had left him before the accession of his stomach complaint. I was informed that one of his testicles had never descended beyond the groin."

The fluid thrown up from the stomach smelt, Mr. Goodsir adds, like fermenting wort, with a faint acid odour; and, after it had stood a few hours, was covered with a mass of froth, like the head of a pot of porter. The fluid itself was then moderately transparent, and of a light brown colour; and had deposited on the bottom of the basin a ropy matter of granular appearance.

Mr. Goodsir proceeded to examine the fluid under the microscope, expecting, from the signs of fermentation which the matter presented, to see some of the globular or moniliform algæ, which are the usual concomitants of certain fermentations. "What," he says, "was my astonishment then to find, in the first drop I examined, not the vegetables I was led to expect, but numerous individuals of a form with allies of which the zoologist is familiar? Drop after drop exhibited the same specific form, with a precision which convinced me that I had now to deal with an organism which, whether animal or vegetable, was closely allied to certain genera of *bacillariæ*, and much more closely to the genus *gonium* among the *volvocinæ*."

These organisms—the sarcinæ—are square or slightly oblong plates, the thickness of which is about one-eighth of the length of one of the sides. They are divided into four equal squares by lines, which join the middle points of opposite sides, and cross at right angles in the centre of the face, so as to resemble a packet bound with cords, which cross at right angles.

Each of the four secondary squares is again divided into four ternary squares, being similarly arranged but more faintly marked.

Perfect individuals vary from 800 to 1000 of an inch linear along each of their sides, and under a high power appear slightly brown or yellow.

After discovering the sarcinæ, Mr. Goodsir submitted some of the the fluid to Dr. George Wilson, who made an elaborate analysis of it,

and found that it contained a large quantity of acetic acid, some acid which he inferred to be the lactic, and a minute quantity of hydrochloric acid.

The patient was under Mr. Goodsir's observation nearly two months, at the end of which the disorder still continued, but was much mitigated by the remedies employed.

Soon after the observations of Mr. Goodsir were published, sarcinæ were found by Mr. Busk in three cases in quick succession.

It appears that the peculiarity of the disorder we are considering consists in this, that the secretions of the stomach, which seem to be usually more abundant than natural, undergo or excite in the food in the stomach, and after they have been thrown up from it, a fermentation which is attended with the evolution of carbonic acid, and with the production of torulæ and sarcinæ, and which leads to the formation of acetic acid.

The production of the disorder seems to require that there shall be some condition which prevents the stomach from completely or readily emptying itself.

The disorder may occur in young persons, and exist for a short time, as in one of the cases related by Mr. Busk, and in a case that has been recorded by Dr. Bence Jones, in which it was noticed a short time before death in a boy of fourteen, who died of peritonitis and granular-disease of the kidney; but it has been most frequently noticed in men who have reached middle age,—persons more liable than any others to simple stricture and cancer of the pylorus, and to other diseases which prevent the stomach from completely emptying itself,—and in such persons the malady is usually of long duration, and may, indeed, continue to the end of life.

The appetite is generally good, but the indulgence of it is followed by flatulent distension of the stomach, attended by a sense of burning or other uneasiness, which, when an ulcer of the stomach exists, sometimes amounts to almost agonizing pain. When the disorder is slight, the heartburn or uneasiness at the stomach continues for some hours, and then gradually subsides, as—in one way and another, by the absorption and discharge of its contents—the stomach gets empty. When the disorder is in higher degree the uneasiness persists until it is relieved by the vomiting or eructation of a clear, sour, fermenting liquid. The quantity of this liquid ejected at once varies in different cases and at different times; and when an obstruction at the pyloric orifice has long existed, and the stomach has become much enlarged, sometimes amounts to two quarts or more. When much is thrown up from the stomach, the bowels, as in ordinary cases of stricture of the pylorus, are usually costive. There is, in most cases, complete absence of fever, but sleep is often much disturbed by the distension and uneasiness of the stomach, which, as they result from eating, are more distressing in the evening and at night than in earlier parts of the day.

The disorder of digestion, the pain, the disturbance of sleep, cause loss of flesh, and, after the malady has lasted long in high degree, the patient is usually emaciated, has a dry skin, a slow pulse, and the look of a person with serious organic disease of the stomach. The disorder is readily recognized when it is in such degree as to cause vomiting, by the circumstance, that the matter thrown up from the stomach ferments, and that both the foam which collects on its surface, and the sediment it throws down, contains abundance of sarcinæ and torulæ.

It would seem, from the evolution of carbonic acid, from the development of torulæ, and from the fact that alcohol was detected by Professor Graham in the matter vomited in a case of this kind, that common alcoholic fermentation is the first step in the process of transformation; but the alcohol appears to be rapidly transformed, and the process ends in the production of a large quantity of acetic acid. No symptoms of intoxication have been noticed in cases of this kind.

As the production of acetic acid from alcohol requires a large quantity of oxygen, there can be little doubt that where, as in the analysis published by Mr. Goodsir, a very large quantity of acetic acid has been found in the matter vomited, much of this acetic acid has been formed after the matter has been ejected from the stomach. We know that fermentation goes on actively in the matter ejected, and the conditions for the acetification of alcohol would seem to be much more favourable when the matter is exposed to the air than when it is shut up, excluded from the direct influence of the air, in the body.

It must not be supposed, however, that this peculiar fermentation constitutes the whole disease. The disease consists primarily and essentially of some organic change which prevents the stomach from completely or readily emptying itself, and which causes a secretion from the coats of the stomach, which, when mixed with the food, is prone to undergo or to excite the fermentative process in question. The fermentation may be stopped for a time; the matter thrown up from the stomach may be alkaline, and contain no sarcinæ, as happened to one case during his stay in the hospital; but the patient, instead of being then well, has the more common kind of disorder which an impediment to the emptying of the stomach causes. The question then arises,—How is it that an impediment to the emptying of the stomach leads to this kind of fermentation in some cases and not in others? Is there any peculiarity in the organic change in the particular cases in which the fermentation occurs? It is curious that, in two of the cases related by Mr. Busk, the disorder resulted from hernia of the stomach through the diaphragm, the coats of the stomach itself being sound.

The development of the sarcinæ has probably the same relation to the fermentative process, or to some stage of the fermentative process, as the development of torulæ has to simple alcoholic fermentation. It is worthy of note that sarcinæ are not peculiar to the stomach.

They have been found in other animal secretions in a state of decomposition. In a review of Lehmann's 'Physiological Chemistry," in the 'British and Foreign Medico-Chirurgical Review' for 1851, it is stated, that sarcinæ have been once detected in the urine by Heller; and Dr. Beale tells me that he has discovered them once in urine and once in decomposing bile.

But, although the development of torulæ and sarcinæ cannot be considered the primary cause of the stomach disorder, the fermentation that attends it, by leading to the evolution of gas, and the formation of acetic acid, and thus distending and fretting the stomach, terribly aggravates the sufferings which the impediment to the emptying of the stomach, which is the origin of the mischief, would otherwise produce.

The heartburn and uneasiness of the stomach may be lessened, by neutralising the excess of acid by carbonate of soda or some other alkali; but the readiest, perhaps, in most cases, the chief means we have of relieving the disorder, are the agents which tend to prevent the fermentative process. The fermentative process may be checked by creosote, which has a remarkable influence in checking fermentation of various kinds, and which was given with benefit in three of the cases noticed above, and in several others, of which accounts have been published in the medical journals. Small doses—a minim or half a minim—in the form of pill, might prove sufficient if taken, as it should be, at every meal.

If we may judge by one of the cases, the fermentation may also be checked, and the disorder, in some, be much mitigated by large quantities of common salt.

A more effectual remedy still is, perhaps, the bisulphite of soda, which is powerful antiseptic, and has been, of late years, much used in some anatomical schools, to preserve bodies for dissection. It has also been used to prevent the fermentation of vegetable juices. It owes its virtues to the circumstances, that it is decomposed by almost any vegetable acid, and that its decomposition liberates sulphurous acid, which has great power to prevent alcoholic and acetous fermentation.

The merit of suggesting it as a remedy for the disorder we are considering, belongs, I believe, to Dr. Jenner, who gave it with much success in the case to which I have before referred. I have myself tried it with much benefit in several cases in which the symptoms were like those that attended the vomiting of sarcinæ. From ℥ss. to ℥j. of it may be given, dissolved in water, two or three times a-day; and probably, with proper care as to the time of giving it, smaller doses would prove sufficient. There are, perhaps, many other agents having power to prevent fermentation, that might prove beneficial in the same way.

In chronic cases of the disorder, the drain from the coats of the stomach, and the frequent throwing up of part of its contents, causes constipation; and it is requisite to obviate this condition, since any undue accumulation in the bowels aggravates the stomach-disorder. The best aperients are probably aloetic or colocynth pills.

When the disorder is severe, and the patient reduced in flesh, opiates, timely administered, are of much service in lessening the uneasiness at the stomach, and promoting sleep.

It now and then happens, that the disorder co-exists with chronic ulcer of the stomach, and that eating solid food causes *pain* in the stomach, which is different from the uneasiness that results from distension of the stomach, and pain also in the corresponding part of the back. In such cases, as in ordinary cases of simple ulcer, the diet should be of the least irritating kind.

By the various means which I have now enumerated, the disorder may be greatly mitigated, the strength of the patient kept up, and his life prolonged: which is as much as can be promised for any disorder which originates, as this usually does, in irremovable organic changes.—*Medical Times and Gazette, Feb.* 11, 1854, *p.* 125.

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55.—*A Case Illustrative of the Habitat of the Sarcina Ventriculi, and of Cardiac Murmur without Valvular Disease.* By Dr. T. K. Chambers, (before the Harveian Society).—He said they had at St. Mary's Hospital lately an opportunity of seeing, *in situ*, the appearance called "sarcina ventriculi," of which he did not think an instance in the human subject had been published:—E. A. S., a girl, aged thirteen, was a patient of his in Victoria ward from August 15th to her disease, November 23rd, 1853. Her chief malady, and the cause of her death, was great enlargement of the heart, the consequence of pericarditis following slight rheumatism. This presented some points of interest peculiar to itself, to be hereinafter mentioned. But in addition to the usual inconvenience thence arising, she suffered during the last two months of her life from pain in the pit of the stomach and frequent vomiting. Temporary relief was afforded by drachm doses of hyposulphite of soda, and at another time by leaving off all food, except a mixture of equal parts of milk and lime-water. The latter treatment seemed to give most relief, but could not be long continued or often repeated for fear of starvation. The vomit was usually acid, and consisted of food mixed with saliva and mucus; sometimes it resembled yeast. No sarcinæ could be found in it. After death there were found—1, some clotted blood in the œsophagus; 2, external congestion of the stomach; 3, in the interior of the stomach a quantity (unmeasured) of sepia-brown substance, partially attached in small flakes to the mucous membrane by a tenacious mucus, superficially transparent, but near the membrane whitish. The microscopic examination of the mucus presented an external layer formed by the above-named flakes, seen as yellow granular masses, a few broken starch cells, and a great number of sarcinæ ventriculi adhering together in masses, together with a few large granular nucleated cells, (? stomach cells.) The whitish portion of the mucus contained only the large nucleated cells, nuclei, cylinder epithelium, and granular matter, but

no sarcinæ. A transverse section of the membrane showed the tubular structure to be perfectly healthy, and filled with nuclei and granular matter. Throughout the stomach the sarcinæ were found only in the superficial layer of the mucus, and not at all in the deeper one, and were always mixed with some starch-globules and other apparent débris of food. Might not the tenacity of the mucus equally spread over the membrane explain the reason why it was not rejected by vomiting?—and was not this tenacity likely to be one of the circumstances under which the organic-like forms called sarcinæ were produced? By this tenacity the semi-digested particles of food were retained an unnaturally long time in the stomach, and preserved from the action of the gastric juice perhaps for many days. What was more likely than that the cellular forms of vegetable life should find here a habitat such as was not elsewhere met with, and that we should find here plants (if we like to call them plants) which were not seen in other situations?

Another peculiarity worthy of note in this case was the existence of a very loud and distinct murmur with the first sound of the heart, most markedly clear at the point of impulse, and for two inches upwards, accompanied by a very decided increase in the flap-sound of the pulmonary valves. The physiological arguments for attaching this latter sign to regurgitation through the mitral valve, as given by Professor Skoda, were so rational, that he (Dr. Chambers) ventured to adopt it without the test of a crucial experiment, as an evidence that the duty of the mitral valves was imperfectly performed. Further proof of excessive impediment to the circulation was afforded during life by anasarca, albuminuria without diseased kidneys, lividity of face, and asphyxia; after death, by patches of sanguineous effusion in the substance of the lungs, and the engorgement of all the viscera with blood. Yet, on inspection of the heart, it was found healthy throughout, as far as its valvular apparatus and form was concerned. The mitral valves were artificially put together, shut perfectly, and the tricuspids as close as usual. The diameter of the pulmonary artery was one inch, that of the aorta, 0·75, which he should suppose was the natural proportion. The form, as he had said, was healthy, yet the organ was of enormous size, weighing no less than fourteen ounces and a half, hypertrophied and dilated in harmonious proportion, so as to be a proper heart for a gigantic man, instead of a little girl. The pericardium was pretty generally adherent inside, and in front was adherent also to the thoracic walls. What was the cause of the systolic murmur? Was it that the adhesion of the heart to the pericardium, and of that to the chest, dragged open the valve when the ventricle contracted? Such was one rational explanation in this case. But to weigh against it, he found in the St. George's Hospital fatal case-book (year 1850, folio 188), a case of a man, aged thirty-four, who died of dropsy, with degenerated liver and kidneys. Here there was a very loud mitral regurgitant murmur, and the heart was found, as in

the E. A. S., hypertrophied, dilated, and free from valvular disease, but differing in that there were no pericardial adhesions. The crucial observation, therefore, failed to establish the most obvious explanation.—*Lancet, Feb.* 11, 1854, *p.* 157.

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## 56.—CASE OF SARCINA VENTRICULI ASSOCIATED WITH FATTY DEGENERATION OF THE LIVER.

By Dr. Robert Barnes.

[This case is related from the necessity of proving how far this parasite may be regarded as essential, or merely incidental, to other morbid conditions in this disease.]

A lady of about sixty years of age had been addicted for many years to the free use of opium in different forms. For a long time together she consumed daily half an ounce of Battley's solution, and probably often more. She was stout, and of adipose disposition, but accustomed to exercise in the open air. Her anxiety for fresh air sometimes amounted to an uncontrollable longing; her appetite was usually good; her diet consisted generally of well-seasoned dishes—at night, of bread and milk. She suffered at intervals from "bilious attacks," which were relieved by vomiting. Of late years she had had one or two attacks in the year of an alarming character: spasms, attended by great pain in the stomach, prostration, numbness, and approach to paralysis of the right side of the body. At these times the power of speech was commonly impaired. These attacks—so severe as apparently to threaten a speedy fatal termination—gave way under the use of large doses of opium and ether. I have ordered her sometimes three grains of morphia at a dose. This was usually followed by warmth of surface, remission of pain, a rising of the pulse, a general sensation of improvement, and sleep. After this action the symptoms would abate, and under bitter stimulating tonics she would recover her usual strength. In the autumn of 1852 this lady went to Jersey, where she had a severe illness, marked by pain in the right side, for which leeches and blisters were resorted to. The cause of her illness was represented to be inflammation of the liver. My acquaintance with her previous history, and subsequent opportunities lead me to doubt the correctness of this view of the case. At any rate this illness would appear to have been much more protracted and grave than any she had previously suffered. It left her weak, with her appetite impaired: she never recovered her ordinary health.

Throughout March, 1853, she underwent excessive anxiety and fatigue owing to the illness of her husband, which terminated fatally. On the 8th of April she complained of spasms, pain in the stomach, and loss of appetite. These symptoms increased, and on the 14th the cramps and pain were intensely aggravated, and violent vomiting set in, with great mental depression. Hydrocyanic acid, ice, soda-water,

blisters to the pit of the stomach, dressed with morphia, had no alleviating effect. No sleep; pulse not quick, but full; tongue white, furred; bowels not costive; urine high-coloured. The vomited matter was at first light-coloured, containing milk, and such similar bland articles of food as she could still take. It gradually became greener; and no food but an occasional spoonful of beef-tea could be swallowed. When the vomited matter was allowed to stand, a green matter subsided forming a thick stratum. On examination this green matter was found to consist almost entirely of sarcinæ. Sulphite of soda was now administered in scruple doses every four hours. After thirty-six hours' use, the vomiting had abated, the last vomitings exhibiting less of the green sediment. The pain remained of the most agonizing intensity. The expression of suffering exhibited in the countenance was afflicting to witness. She begged for chloroform as an escape from her torture. The quantity of sulphite was diminished, and a mixture of infusion of quassia, bi-carbonate of potassa, and tincture of orange was added. The symptoms remitted somewhat, but the prostration increased. Breathing was distressing; she could not fill the chest, but respiration was heard in every part; the pulse was intermitting, especially after any exertion, such as sitting up in bed. Pressure below right ribs gave pain. There was no swelling of the feet or abdomen. A blister was applied to the right hypochondrium; ten grains of calomel, followed by an enema. On the 18th, Dr. Hassall saw the case with me. The symptoms were as detailed. The treatment was persisted in. On the 19th the quassia mixture seemed to compose and give relief, so much so, that it was supposed by the patient and her attendants to contain a narcotic. The appetite was somewhat improved; she took a little beef-tea. Some urine passed, and the bowels acted freely. On the 20th the distress of breathing increased; the anxiety of countenance and of manner returned. She begged for chloroform with increasing earnestness. This was administered occasionally, and was the only means by which even a temporary mitigation of suffering could be procured. The remittent character of the pulse increased; jaundice appeared; the tongue was not furred, but glazed. The treatment was continued. On the 21st she was much worse; she had vomited several times in the night; the green matter was again visible; tympanitis and some effusion in the abdomen. On the 22nd, at eight p.m., she sank. Her dissolution was preceded by a return of copious vomiting. The suffering at the stomach, and the distress of breathing and the jaundice gradually became more intense.

*Autopsy on the 24th.* The examination was limited to the stomach, liver, and intestines. A considerable layer of fat in the walls of the abdomen; the omentum was also very fat. The stomach was full of turbid green matter similar to that which had been so abundantly vomited just before death; some of the same fluid was also found in the duodenum. The mucous membrane of the stomach exhibited a

punctate injection, which was a little more marked towards the pylorus. The pylorus was not contracted to a sensible degree; the valvular ridge, although it felt slightly thicker than natural, was composed of nothing but normal tissues—muscular fibres and mucous membrane. The utmost that could be said was, that there was slight hypertrophy of the structures forming the valve. There was some clear fluid in the peritoneum. The peritoneal covering of the liver was free from any mark of inflammation or adhesions; it was not enlarged or contracted; the colour was pale, the aspect like that of a nutmeg; an incised surface presented a similar appearance; the texture was soft and lacerable. On a microscopic examination, scarcely a vestige of liver that could be supposed to be in a condition to fulfil its normal function could be found. It might be said with truth, that the hepatic cells in every part were full of oil. It is undoubtedly a matter for regret that circumstances prevented a more extended examination, embracing the heart, lungs, and kidneys. A careful investigation of the chest during life leads me to believe that the lungs were healthy. The urine had given no indication of granular disease of the kidney. It is not, however, improbable that there was some amount of fatty degeneration of the heart.

Confining our attention to the facts we possess, to what cause can we attribute the development of the sarcina in this case? We may fairly conclude that the sarcina did not constitute the essential morbid condition. That the administration of sulphite of soda, alkalies, and quassia was attended by a marked, although temporary mitigation of the symptoms coinciding with a diminution in the quantity of the sarcina is true. But the parasite has now been so frequently observed in connexion with an abiding organic disease that we can hardly avoid the conclusion that it is an accidental and a secondary result. The most obvious disease in the case related was the fatty conversion of the liver. This had certainly existed for a long period; and it is surprising that such extensive alteration of structure had not long before proved fatal. The slightly hypertrophied condition of the structures forming the pyloric orifice was scarcely sufficient to support the opinion of Dr. Todd, that retardation of the food in the stomach was the occasion of the development of the sarcina. The thickening observed produced no sensible contraction; nor was it observed that the stomach was unusually large.

A sufficient number of cases now exists to show, at least, this much, that the sarcina may be developed in the stomach under a variety of circumstances. Examination of the cases recorded will also, I think, render it doubtful whether any patient in whom the sarcina has been observed has ever been fairly cured. So much of the disease as might be supposed to depend upon the presence of sarcina may, indeed, appear to have been removed under the use of sulphite of soda and other treatment. But the persistence or return of certain distressing symptoms points to the conclusion that there existed some other disease.

The opinion of Schlossberger, that the appearance of sarcina is invariably an epiphenomenon, is probably correct. In every instance where the opportunity has been afforded of examining the body after death, some organic disease has been found. Thus, in Dr. Bence Jones' case, there was Bright's disease and peritonitis, but no disease of the stomach or intestines. Of three fatal cases recorded by Dr. Ransome, one exhibited granular kidneys: the stomach was enormously dilated, and around the pylorus was a dense mass of fibrous tissue which had narrowed the orifice to the size of a quill. Another showed also enlargement of the stomach; and the pylorus contracted to the size of a quill, was fixed to the liver by old and dense adhesions. There was an ulcer of the stomach. The liver was apparently healthy. In Dr. Ransome's third case, the patient died after perforation of the stomach by an ulcer. The liver was affected with medullary cancer, and was adherent to the pylorus. The pyloric orifice was large enough to admit the little finger.

I am inclined to conjecture that *any cause* capable of inducing obstinate vomiting may, in the end, lead to the formation of sarcina, provided the necessary acid condition of the secretions of the stomach be present. The observations of Andral, Dr. Hassall and others, clearly establish that the yeast-plant and the penicilium glaucum are apt to be developed in acid fluids containing organic matter. Dr. Neale has found both these parasitic productions present in vomited matter containing sarcina. It seems not unreasonable to suppose that the sarcina which is always found in acid fluids is as much an accidental formation as the yeast-plant and the penicilium glaucum—that this, the sarcina, like the yeast-plant and penicilium, is a symptom and indication of some pre-existing disease.

Another question is suggested by the present case. May not the vomited matter in some cases described as cases of "æruginous vomiting" have owed its green colour to the presence of sarcina? In many cases of green vomiting the colour is undoubtedly due to the presence of bile. In the case I have related, the general appearance of the vomited matter might well have justified the appellation of æruginous. Chemical tests afford the readiest means of manifesting the presence of bile: the microscope alone can afford satisfactory evidence of sarcina. In every case of green vomiting both methods of analysis should be employed.

Whether we regard the sarcina as an accident, as a mere symptom, or as an essential disease, the discovery of its occurrence in connexion with distressing symptoms which admit of more or less complete relief by the aid of agents destructive to the sarcina, must be admitted to be a valuable fact added to the stores of medical knowledge. The relation between this vegetable parasite and organic diseases furnishes one of the most interesting pathological problems. Facts are not yet numerous enough for its solution. But the diligent microscopical and

chemical investigation of the vomited matters in a large number of cases, varying in their circumstances, cannot fail to be attended with success.—*Lancet, Jan.* 7, 1854, *p.* 3.

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## 57.—ON FATTY LIVER.

By Dr. H. Bamberger.

*Pathological Anatomy.*—The anatomical characters of fatty liver in an extreme case are: Increase in bulk of the organ with expansion of the surface; flattening and thickening of its borders; smooth, glistening, transparent, and tightly-stretched peritoneal covering; a a doughy feel; without and within a continuous yellowish red or pale yellowish white colour; contents of the consistence of tallow, which clings to the blade of a dry and somewhat warmed knife. A variety of the preceding is the waxy liver, which differs in presenting a deeper colour, like yellow wax, greater consistence, and a dry fracture: it is characterised by a peculiar modification of the infiltrated fat. Under the microscope there are usually seen greatly enlarged hepatic gland-cells filled with oil-globules of every size, often to that extent that the nucleus is no longer visible. Also between the cells free fat. in the form of drops, is effused. Sometimes there may be observed the peculiar radiating crystals of margarin. Of the chemical conditions of the bile in this form of disease nothing certain is known. Its visible characters do not differ materially from the normal; according to Frerichs, it is always poor in fatty matter; according to Lehmann, it sometimes contains albumen.

*Etiology.*—The fatty metamorphosis of the organic parenchyma cells is one of the most important morbid changes to which this organ is subject. According to Reinhardt, fat molecules may be deposited, under circumstances, in all cells supplied with albuminous contents; according to Virchow, cells of a certain age contain granular fat, whose appearance usually precedes their spontaneous destruction; certain anomalies of nutrition, either of excess or deficiency, favour this degeneration, which occurs from the metamorphosis of the actual contents of the cell. In most cases of fatty liver, however, the fat does not appear to originate in the interior of the cell, but to be absorbed from without,—namely, from the blood,—and to become infiltrated into the cells. This view finds support from an observation of Gulliver, that those parts which have become most diseased lie about the ramifications of the portal vein; also from the experiments of Majendie, Gluge, &c., who produced fatty liver artificially by injecting fluid fat into the blood; also by the observation of Gluge and Thiernesse, that fatty liver may easily ensue from habitual indulgence in fatty food.

Upon the bio-chemical antecedents of this disease nothing very certain is known; but there are many conditions which favour its

development. For example, want of bodily exercise; indulgence in food containing fat, or easily changed into that substance; excess in spirits, especially brandy. Under circumstances of health, the greater part of the fat obtained from the chyme enters the thoracic duct to be conveyed to the right cavities of the heart, thence to be carried to the lungs, where it serves as a material for respiration. Part of the fat probably goes by the portal vein to the liver, here to be used in the formation of the bile, a fluid abounding in carbon; so that, in the normal state, there is no excess of fat, which can become infiltrated into the hepatic gland cells. Under the circumstances of fatty disease, it appears that, either from positive excess of fat in the portal vein, or from deficient action of the lungs, or most probably from both causes combined, so much fat is accumulated in the liver, that, after the formation of the bile, the rest becomes infiltrated in the gland-cells in a molecular form. Very often fatty liver is found as an accompaniment to tuberculosis, and also, according to the author, to chronic complaints of different organs; so that he comes to the conclusion, that every protracted disease, especially when it affects respiration, favours the occurrence of fatty degeneration. Moreover, infiltration of fat accompanies the most opposite forms of chronic liver disease,—namely, nutmeg liver, cirrhosis, and cancer. Fatty liver does not occur in infancy or childhood; it is commoner among women than among men.

*Symptomatology and Diagnosis.*—The slighter degrees of fatty liver give rise to such trivial symptoms as not to need notice here. But even the higher forms usually produce no suffering, or such slight inconvenience as not to be associated with the real seat of disease. A patient usually feels a weight in the right hypochondrium, especially when he lies on the left side. Severe pain only ensues when the formation of fat is very rapid, and then it arises in all probability from stretching of the serous investment. There are disturbances in the digestive organs, usually attributed to other causes. In spite of this absence of strongly-marked symptoms, the diagnosis of fatty fever is, in its advanced stages, not difficult in the greater number of cases. In individuals whose mode of life favours the production of fatty liver, in those suffering from chronic diseases, especially tuberculosis of the lungs, the physician will rarely err in forming this diagnosis, when he detects an increase in the volume of the organ, both by the hand and by percussion, while there is neither pain, nor icterus, nor ascites, nor enlargement of the spleen.

As regards prognosis in its earlier stages, the disease is of secondary importance, and not likely to demand much attention. In its advanced stages it is important as connected with similar changes in other parts of the organism. The treatment can only be laid down as regards that variety of the disease which is a consequence of inactive life and luxurious habits. Such articles of food as cannot be converted into fat should be recommended, such as lean meat, green

vegetables, fruits. Spirituous drinks, too much sleep, fatty kinds of meat, &c., starch meal, and sugary substances, must be forbidden; bodily exercise and mental activity must be insisted on. Alkaline waters may be administered; also the neutral salts. In tuberculosis and chronic diseases of important organs the fatty liver is but an indication of more important changes elsewhere, and requires no particular treatment.—*Med. Times and Gazette, Oct.* 29, 1853, *p.* 458.

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58.—*State of the Liver in Jaundice.* By Dr. Handfield Jones, F.R.S.—[From the history of several cases, the conclusions Dr. Jones arrives at are as follow:]

1. That interference with the out-flow of bile into the intestine causes dilatation, chiefly of the gall-bladder and larger ducts, and not at all of the smallest.

2. That this arrest of the bile-flow tend to produce local or general jaundice of the liver itself, but does not do so necessarily, or at least not for some time.

3. That local jaundice of the liver in spots, and general jaundice, as in acute yellow atrophy affecting the whole organ, may be produced without any such obstruction.

4. That any considerable accumulation of yellow pigment in the hepatic cells may be chiefly, if not entirely, dependent on vascular congestion long protracted, the exuding hæmatine undergoing changes in the liver similar to those seen when it exudes in other parts.

5. That from the comparatively small number of the coloured spots, and their often wide separation in cases of local hepatic jaundice, there seems reason to conclude, that derangement of the action of the ultimate ducts is materially concerned in their production. If this were not so, the spots ought to occur at every point where a duct terminates, as the backward pressure must tell on all alike.—*Med. Times and Gazette, Nov.* 26, 1853, *p.* 564.

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## 59.—CASE OF DIARRHŒA ADIPOSA, WITH OBSERVATIONS.

By Jeffrey A. Marston, Esq., Newcastle.

B. R., aged 35, labourer, of bilious temperament and middle stature, with a fatty frame, but a very sallow and emaciated face—came under treatment, November 1852. He complained chiefly of general debility, and a dull pain, accompanied by a creeping sensation, as if of a live animal, along the inferior part of the epigastrium to left side, and round the back to the right hypochondrium. He had also frequent purging of large quantities of a very peculiar fatty-looking substance, but in the intervals his bowels were rather sluggish, when purgatives and mercurials appeared to give him some relief, but always augmented

the discharge of this fatty matter. Some time back he had suffered from a dull aching pain in the right hypochondrium and back, extending upwards occasionally to the right shoulder. These symptoms had been gradually coming on for ten or eleven months, without apparent cause. The respiration was slow and passive, but no pulmonary disease could be detected. Heart's action was feeble, and impulse scarcely perceptible, yet no organic lesion was present, nor had he experienced dyspnœa or palpitation. There was no tenderness, swelling, or tumour anywhere, except a slight enlargement of the liver. His appetite was good, and he had a great desire for saccharine matters, fat meat, and hydro-carbons generally. Urine was passed in abnormal quantity, pale in colour, with very slight reaction on litmus: sp. gr. 1·030: under the microscope it presented a few epithelial scales, and a number of oil globules; on evaporating a portion and treating it with ether, these globules were dissolved;—there was less than a normal amount of urea and lithic acid, and no albumen; but Trommer's test, yeast, and oxide of silver indicated the presence of sugar, and the skin was harsh and dry, though he did not complain at all of these diabetic symptoms, *all* of which disappeared some time before death. Tongue was slightly furred; gums and inside of lips were pale and flabby; pulse 100, but it varied during treatment from 90 to 120. No cancer, phthisis, or cardiac affection could be traced in any of his family, which had been generally healthy.

The matters passed from the bowels presented a very fatty, tenacious, and peculiarly slimy appearance, deficient in bile, and altogether different from fæces; on raising a portion on the point of a knife it appeared in greasy masses; under the microscope numerous epithelial scales, with mucus, and a substance laden with oil globules, in every respect similar to fat, were observed: their fatty nature was rendered more evident by their being soluble in ether, and with liq. potassæ forming a semi-opaque gelatinous mass exactly resembling soft soap.

Now the questions as to the *origo mali* in this case were—Was the liver affected with chronic inflammation or enlarged by engorgement? Did the fault rest with the stomach, pancreas, or kidneys, or was it a case of mal-assimilation and degeneration of the tissues generally? I confess it baffled my attempts at diagnosis. He had already been under medical treatment for the last six or eight months, during which he had taken mercury and opium, been leeched, blistered, &c., without marked benefit. I advised that he should abstain from farinaceous and saccharine articles of food. Diaphoretics succeeded, though with difficulty, in producing diaphoresis; the sweat had no acid reaction on litmus. Olive oil, instead of being beneficial, only increased the discharge of fatty matter, and deranged the stomach. Purgatives, mercurials, counter-irritants, with small doses of iodide of potassium and ung. iodin. to region of liver, and a variety of other remedies failing to produce relief, at last all medical treatment was discontinued. His appetite continued good, but the adipose diarrhœa

(four or five stools per diem upon the average) continuing, he gradually sank, and died apparently from asthenia, after having been under medical treatment altogether thirteen to fourteen months. Towards the last he was ordered porter and beef-tea, with opium, to support his strength, and relieve irritability. The urine was examined from time to time, and the quantity of sugar was found gradually to decrease, and ultimately to disappear altogether: but there were still present the oil globules and fatty epithelium. I fancied that the symptoms were somewhat mitigated by careful abstinence from farinaceous articles of diet.

In consequence of the patient's residing at a distance of six miles, I could not watch the case so closely as I desired.

*Post-Mortem Examination.*—General appearance of body sallow and emaciated; face, tongue, and lips, flabby and anemic.

*Head.* Brain and its membranes healthy, and no abnormal effusion into ventricles.

*Thorax.* Old pleuritic adhesions on both sides. Lungs gave a healthy crepitus, contained no tubercles, but were somewhat doughy and greasy to the feel; pericardium quite healthy; heart dilated and flabby; walls of ventricles collapsing, and becoming perfectly flat, and though not presenting the true fatty degeneration of the sacral elements, yet there was a deposition of fat intimately amid its muscular fibres.

*Abdomen.* No adhesions of peritoneum; the sub-peritoneal fat was abundant. Liver slightly enlarged, and presented the fatty greasy structure of a phthisical subject. Gall bladder full; ducts quite patent. Kidneys, particularly the left, enlarged and fatty. Duodenum quite healthy, but the head of pancreas appeared to be converted into a hard schirrhoid tumour, which did not press upon the ductus communis choledochus, as in most of the similar recorded cases, whilst the body and other parts of gland were atrophied, and its duct was found perfectly obliterated and degenerated into an impervious cord. This state of the pancreas was, I presume, the most important of the post-mortem appearances. The examination might have been performed more minutely, but for the prejudices of the friends.

*Observations.*—This case is a peculiar one. Its physiological bearing is very important, particularly at the present time, when many of our leading organic chemists and physiologists are debating upon the function of the pancreas. It is a matter of great difficulty to reconcile the conflicting statements made regarding the glandular system generally, and much of the discrepancy and difficulty appears in some measure to have arisen, from physiologists having pursued a too systematic and material course of reasoning. There can be no doubt, that the rapid strides which organic chemistry has recently made, have opened to us a wider field of investigation, and thrown great light upon many obscure points, yet there can be no question also, that the functions of the animal machine, guided and ruled by vital

forces, differ materially from the laboratory of the chemist. That the pancreas does exert an important influence in the animal economy is obvious from its size, situation, and permanent duct. Observing the stages of development of this organ in different animals, we notice that it is much larger in herbivora than in carnivora, and that there is a correspondence (amid the latter class), between the development of the organ on the one hand, and the ingestion of fatty material on the other. In its minute anatomy it is almost identical with the salivary glands, and its secretion resembles very closely the saliva; according to Leuret and Lassaigne, its fluid has an alkaline reaction. From the experiments of Bouchardat and Sandras, made upon birds it appears that the pancreatic juice exerts a specific influence upon starch granules, dissolving them; and if albumen be present in the secretion, as is generally stated by physiologists (but denied by Blondlot), then there can be doubt that its action upon amylaceous matters is analogous to that of the saliva, in dissolving them, and producing therefrom dextrine and grape sugar; but these experiments left open the question whether the pancreatic secretion, or the secretion of the duodenal mucous membrane, had the greater share in the function. It appears to be generally settled that the digestion of amylaceous matters is accomplished by the action of the salivary and pancreatic secretions, and it is probable that the unassimilated portion of this form of non-azotized food passing on through the small intestines, gives rise to the lactic and acetic acid fermentation in the cœcum, which according to Blondlot is there produced by the decomposition of the non-azotized ingredients of food. Tiedemann and Gmelin have also proved that the contents of the cœcum are highly acid, even in animals that consume no food capable of undergoing the lactic or acetic acid fermentation; hence they concluded that the secretion of the intestine is itself acid. This may be so, but from the great development of the cœcum in the herbivora, we may, I conceive, fairly deduce (in the absence of experiment), that the acid of that intestine does, in some degree at least, depend upon the decomposition of the amylaceous ingesta; for from the experiments of Bernard, Professor Thomson, and Plattner, the bile does not prevent either the formation of sugar, or its conversion into lactic or acetic acids. It appears, then, that some of the sugar produced by the action of the salivary and pancreatic glands, does undergo the lactic or acetic acid fermentation in the cœcum, particularly as there is generallly a corresponding amount of development between the former organ and that intestine. As regards the other part of the sugar existing in the duodenum, it would appear, from H. Meckel's experiments, that it is converted into fat by the action of the bile; for he found that bile, acting upon grape sugar with the aid of a gentle heat, converts it into fat.

Thus far the function of the pancreas, in primarily preparing amylaceous matters for assimilation and secondary decomposition, appears pretty plain; but it has long been presumed that the pancreatic juice

exercises some influence upon the digestion of fatty ingesta, and it has been generally stated, that its action on fatty matter gives rise to a minute division and suspension of its molecules, something analogous to an emulsion; and Bernard goes farther than this, and asserts, that its direct function is to separate fatty ingesta into their proximate elements, as butyric acid, &c., and glycerine.

Mialhe, adopting Bernard's views, explains its action upon the principle of fermentation. More recently another set of physiologists, of whom Frerichs and Lenz appear to be the most prominent, have published a series of experiments to prove that its absence in the intestine does not prevent the digestion and assimilation of fat. They experimented upon cats, and found the usual amount of fatty matter in the chyle, after ligature of the pancreatic duct. Here, then, exists a division between two leading sets of physiologists; for Bernard still adheres to his views. The question comes, does this case in any way fill up the gap? It has been advanced by Bouchardat and Sandras, that the free alkali of the juice, or serum of the blood, would be sufficient to dissolve the fat; and adopting Plattner's theory, the soda of the bile may be almost vicarious of the action of the pancreatic juice, in separating the fatty ingesta by saponification with its acids; but whether this could continue long is not evident, and what appears to be the real root of the question is, whether, under long continuance, this would not be incompatible with existence. In the case before us, it is possible that the choleate of soda of the bile, and the alkalies of the serum did supply an alkali to the fat, thus saponifying it, and that the choleic acid, if Plattner's views be correct, taking albumen as its base, the resulting compound, which is the product of so highly an organized gland as the liver, on the one hand, and the chemical and antiseptic action of the gastric secretion, which is, doubtless, itself not a mere chemical combination, but a definite semi-organized material, on the other, might give rise to the fatty albuminous molecular base of the chyle; but that this continuing, these alkalies were not only insufficient in quantity to the digestion of the fatty ingesta, but an imperfectly organized material was formed, from which an imperfect chyle resulted.

The presence of sugar in the urine in this case is difficult of explanation; but be it remarked that this was a transitory symptom, existing most when the patient partook largely of amylaceous matters, which are easily capable of being resolved into sugar, and ultimately ceasing long prior to death. It might be that a larger than normal amount of fatty matter was presented to and absorbed by the tributary branches of the vena porta, and that through the immediate action of the liver (if Bernard's views be correct) this was resolved into sugar and carried by the hepatic vein into the general circulation; and, being more than normal in quantity, did not altogether undergo decomposition in the lungs (as it is conceived to do), but was excreted by the kidneys. Again the deposit of fatty matter in the viscera

generally may admit of a similar explanation; for I apprehend we must regard the fatty degeneration of the liver not as a primary affection, but as a secondary disease, resulting from the actual deposition of fat from the blood, it being found in a similar condition in almost all diseases, attended by much emaciation. Perhaps the fatty ingesta in this case, not having been subjected to the vital and chemical action of the pancreatic secretion, had never reached a sufficiently organized state to undergo the necessary changes, prior to assimilation or secondary combustion.

Looking at the case in all its bearings, it certainly appears to support Bernard's views, which I cannot consider entirely overthrown by the experiments before quoted. We may, I apprehend, fairly conclude from this case, that the pancreas does aid in the digestion of starchy matters, and that it does in some way prepare the fatty ingesta for absorption, and it supplies the gap in the experiments of Bouchardat and Sandras, as to whether the pancreatic or duodenal secretion had the greater share in the digestion of starch; for here the duodenum was apparently quite healthy, and the head of the pancreas alone involved by a malignant disease, differing from the cases before recorded. These I find to be—a case of diarrhœa adiposa under Dr. Elliotson, which recovered under the administration of olive oil, a similar case met with by Mr. Lloyd, and three such cases seen by Dr. Bright. The results of post-mortem examinations in all the fatal cases, disclosed schirrhous disease involving the pancreas and duodenum. Surely this points to the pancreas as discharging a function having direct influence upon the digestion and assimilation of fatty matters. In a case of malignant disease of the pancreas, all medical treatmant would be abortive; but supposing its function to be suspended by a non-malignant tumour, &c., we have yet to learn what would be the proper treatment.—*Glasgow Medical Journal, Oct.* 1853, *p.* 301.

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60.—*Tapeworm.*—At a meeting of the fellows and licentiates of the College of Physicians in Ireland, Prof. Osborne mentioned that he had been lately led to use tannic acid for the destruction of tape-worm by several considerations, and especially from its action on gelatine, as well as on albumen. Having ascertained in the usual way the presence both of gelatine and albumen in these parasites, it is to be inferred from analogy that the former is in their integuments, and if so, that in tannic acid we have the desideratum of an agent acting chemically on the worm, but not irritating the stomach or bowels of the patient, and, moreover, capable of being retained long enough to produce its full effect. He stated that in the cases of two patients whom he had under this treatment, the appearance of the ejecta indicated that the worms had suffered from a chemical irritant,

being in some instances curled and contracted, and in others friable and broken down, when expelled by a purgative.—*Dublin Quarterly Journal, Nov.* 1853, *p.* 457.

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61.—*New Remedy for Tænia, &c.*—Tænia is of so rare occurrence with us, that no individual practitioner sees enough of it to enable him alone fairly to test any medicine. I therefore beg to call the attention of my medical brethren to a remedy readily obtained, cheap, and pleasant, which I believe will be found quite sufficient. In 1852 I reported a case of radical cure of tænia, by the use of an emulsion of pumpkin seeds, after the oil of terebinth and even kousso had signally failed. The seeds abound in fixed oil, which is the anthelmintic principle, and has been employed with the happiest effect in half-ounce doses twice in the day, followed by an ounce of castor-oil.—Prof. Paterson, in *Philadelphia Medical Examiner.—Lancet, Feb.* 4, 1854, *p.* 132.

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## DISEASES OF THE URINARY ORGANS.

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### 62.—ON BRIGHT'S DISEASE OF THE KIDNEY.

By Dr. Samuel Wilks.

[Dr. Wilks's opinions are entitled to the greater consideration, as he commenced the study of this disease under those who laboured with Bright himself. He observes]

It may not be useless, in the first place, to inquire what is understood by the term Bright's disease. The answer to this question may be thought to give at once a solution to its pathological nature; but this is really not so. It must be remembered that Bright's name was given to designate certain cases of disease marked by certain symptoms and certain morbid conditions of the kidney; and it must also be remembered that Bright included in his description a variety of forms of diseased organ, as well as a variety of symptoms. Among these were two very remarkable extreme conditions—the one a kidney large and white, often double the natural size, and associated with a very considerable dropsy of the whole body; the other a kidney hard and contracted, often only half the usual size, chronic in its character, and often destitute of symptoms. Bright's name, I say, belongs to one of these forms as much as the other, for he described both. No pathological theory, therefore, of Bright's disease can be admitted which does not include in its application both these forms of disease. If the two conditions be considered different, then more than one pathological theory is required. If all varieties are included under one pathological condition, as Frerichs writes, then the term Bright's disease

becomes at once definite and scientific. If the conditions, however, are different, then Bright's disease has a mere nominal value, and has reference merely to a large class of cases which Bright described. In this general signification I think the term can alone be used. Thus, the expression is seen to have very little scientific bearing, and is nearly coextensive with that of renal disease, so large a field of observation did Bright open.

*Anatomical Characters of the Kidney in Bright's Disease.*—[Dr. Wilks observes, that though his first two classes are characterized by the large white kidney and the small contracted one, yet these conditions are merely to be regarded as the extreme conditions of two varieties of the affection.]

The large white kidney is produced by an inflammation of the secreting tubes and the exudation of an albuminous material, which, being constantly discharged and found in the urine, has been so fully described by Johnson and others. In a case which is fatal in a few days, as seen after scarlatina, often nothing is found in the kidney. If the case be more severe, or if the malady have existed for a longer time, then the organ is found swollen, gorged with blood, and the cut surface often of a not uniform colour, some parts inclined to be pale and others dark. If the case be still further advanced, evidence is gained of the essential pathological condition of the organ, an inflammation of the uriniferous tubes. The kidney is gorged with blood, some perhaps having transuded into the tube itself, and mixed with it is the peculiar inflammatory secretion. Beginning with a slight amount of exudation in the tubes, all degrees beyond this are found until we arrive at the extreme condition where the whole secreting structure is blocked up with it, and in some places destroyed by its coalescence in masses. The tubes become misshapen and distorted, the walls are thickened, and on their external surface and between them some amount of albuminous material is thrown out; but while that in the interior is of a granular kind, that on the external is plastic or fibrous. In course of time the organ is much enlarged by the increase to the secreting part, the tubular portion is much diminished and encroached upon, and the organ has become exsanguine. Sometimes the veins may be filled with blood, and this gives the mottled or marbled look which some describe. The granular condition results from two different causes. The granules which some authors speak of are evidently little masses of deposit scattered all over the surface of the organ; while those generally alluded to are larger, and consist of bundles of tubes conglomerated together, and associated in this arrangement by the natural division of the veins on the surface.

Under the term *small contracted kidney* I allude, as I before said, not only to the extreme condition found, but to all lesser stages of the degeneration: for example, a kidney may be found becoming granular, but not yet wasted. The onward progress of the disease results,

however, in the organ becoming very small, hard, and contracted. By contraction, I mean the surface, instead of being smooth, is puckered, uneven, and often having indentations. It is rough, and covered with granulations, and the capsule generally tears the surface in the endeavour to remove it. The disease is seen by the naked eye to be one essentially of the secreting structure. This is wasted, and in some parts so narrow that the straight tubes nearly reach the surface. It is also wasted irregularly; so that the thickness varies, giving an uneven outline to the edge of the kidney. As a rule, no deposit is found in these cases; while a true degeneration of the secreting structure has taken place, and this generally by the addition of a large quantity of fibrous tissue. Here I may state my surprise of the doubt which some authors have expressed at the presence of a fibrous matrix in the kidney. Of this I should have thought the proof were easy in a healthy kidney, and of its development in the morbid organ there cannot be the slightest doubt. In many of the small kidneys a large quantity of the substance is fibrous tissue. A part of this no doubt is the remnant of shrunken and wasted tubes, but a part also is a new development. Besides the fibrous tissue, the microscope shows tubes of all shapes and sizes, much distorted, and many shrunken to mere threads. In some parts of such organs the function must altogether have ceased, as the tubes appear quite isolated from any healthy connections, are nearly full of granular matter, having lost their natural epithelium, and have undergone fatty degeneration. The Malpighian bodies may be also found wasted to less than half their usual size, and probably quite destitute of function. The granules on the surface are masses of tube bound together by fibrous tissue, and thus marked out by the natural division of the veins. Thus, the organ often strongly resembles a cirrhosis of the liver, where a new fibrous structure, running in the course of the vessels, circumscribes masses of the secreting tissue. There seems no limit to the degree to which the kidney may degenerate. Together we sometimes find them weighing only three ounces, and when from any reason one kidney is more advanced in disease than the other, it may waste until not a portion of healthy structure be left.

One of the most remarkable changes which this form of kidney disease undergoes is the *cystic degeneration*,—a condition, according to the early essay of Simon, thought to be its natural termination. Some writers, however, as Frerichs, have almost ignored its existence, while Johnson appears to speak with doubt both as to its anatomy or even to its reality. Indeed, I have failed to gather with precision the opinion of the latter writer concerning these cysts, as he speaks of their appearance as the result of an ocular fallacy dependent upon the section of tubes, and at the same time of their production from the dilatation of tubes.

Of the very common appearance of cysts in the kidney I think there can be no doubt; I now speak of microscopic cysts, and not

those which are plainly visible to the eye, and these are in proportion, as a rule, to the degeneration of the organ. I confess for a long time I accepted the theory of their formation as given by Simon, both because of the want of a better and as it best explained the appearances, though the pathological theory of an exogeneous growth of renal cells burst from their tubes was indeed not one to be readily received without further proof. I had fully made up my mind, however, of their real existence before any doubt was thrown upon them. The palpable ocular delusion of mistaking tubes for cysts may with care be avoided. The faith I had in their existence has been fully confirmed by many further observations. In many particular specimens a doubt may exist whether a certain appearance may arise from an incised tube or a cyst; but an examination of various parts of the same organ can leave no doubt. Occasionally I have met with a kidney where, from the circumstance of one being diseased in advance of the other, such a degeneration has occurred that nothing has been seen under the microscope but a mass of cysts, resembling very much in appearance a cluster of ova. These I have separated, detached, and rolled over in the field of the microscope, and have thus quite verified the fact of their real and independent existence. From this fact of being able to isolate them, and from their various forms and sizes, I formerly concurred in Simon's theory. Often can these cysts be traced from the ordinary dimensions of the renal cells to any size above. Since perusing Dr. Johnson's book and his theory of their production from the walls of the tubes I have not had an opportunity of examining many examples of the disease; but that they are not formed from the whole calibre of the tubes is certain, from so many being smaller than the tubes themselves. If formed from these structures, it must be by small protrusions from the sides, which afterwards attain a separate existence. In favour of their formation from tubes, it must certainly be said that they are produced at the expense of the latter, for where they are formed there the true tube is wanting. They are also seen in a row, running in the direction of the tube, and in fact occupying its position. They are firmly adherent to the surrounding tissue, and with difficulty detached. They seem also to be lined by an epithelium very like that of the tubes—at least the larger are; the smaller cysts I have seen almost empty, and containing but a little granular matter. In a very degenerated kidney—not much above the size of a walnut—the whole organ was converted into cysts whose diameter was very uniform and a little larger than that of the tubes. They were merely collected into an aggregated mass.

It has been taken for granted that the larger cysts found so often on the surface of the kidney are of the same formation as the microscopic ones. Of this there can be no positive proof, and indeed I thought the contrary to be the fact for some time; for, after examining many specimens of morbid kidney, I found those with visible cysts on the surface had no smaller ones detectible by the microscope, and, on the

other hand, in the first few cases of the cystic degeneration I met with there were no cysts visible to the eye. I thought it thus possible that the larger ones might be formed by a dilatation of the urinary tubes, while the smaller had a distinct formation. The contents of the vesicles, not being urinous, is no objection to the first-named theory, when it is considered how soon a decomposition would take place. With reference to the formation from Malpighian capsules, I think I have seen some cysts undoubtedly produced in this way,—at least I have found Malpighian bodies shrunken to half their usual size, only slightly connected with their tube, and evidently had lost their function, and so presented the appearance of isolated bodies.

That this cystic degeneration is the natural termination of the granular disease of the kidney, as Simon has hinted at, is not yet shown, though I believe it is a condition not uncommon, and generally to be found in the most advanced cases. In fact, the more perfect degeneration the greater probability of the presence of cysts, and, as I before said, I refer to microscopic cysts. The larger and visible ones appear to depend in many cases upon other causes; as, for instance, lately I observed a kidney in a patient who had died of phthisis scattered throughout with cysts, varying in size from that of a pin's head to that of a pea, and yet the intimate structure of the organ appeared quite healthy.

The *third form* of Bright's disease, which I call the coarse kidney, I have already referred to as being a subacute inflammation of the kidney, and having such an amount of deposit discoverable in the tubes as is attributable to the degree of morbid action present.

With regard to the *fourth form* which I have mentioned I am in doubt how far it resembles the morbid appearances mentioned by others. It is not altogether like the lardaceous kidney of Rokitansky —at least it is wanting in the transparent bacon-rind appearance of the liver which is known by this name. A section of the kidney I speak of has the appearance of a dense piece of albumen, of a milky whiteness, and having no structure apparent or any masses of exudation. The kidneys are very large and dense, and the morbid deposit seems to have occurred quite at the expense of the secreting structure, the cortical part being enlarged and the tubular wasted. The tissue is hard, with difficulty separated with needles for examination, and found to consist wholly of fibrous tissue, though in parts, by close examination, some few remaining urinary tubes may be found. As the ordinary white kidney of Bright's disease consists of an inflammation, with an exudation from the surface of the tubes, so here the inflammation seems to have been of a plastic character, an effusion having occurred amongst the tubes and bound them together. As one may be likened to a bronchitis, so the other may be considered in the light of a pneumonia where hepatization has occurred—the lung structure become infiltrated with albuminous material, and so converted into one mass in which all the natural tissue is lost to the eye. As in

the small kidney of the second form of Bright's disease a fibrous development often takes place, which is essentially chronic, and connected with the general wasting of the organ, so in these cases the same tissue seems more actively and rapidly produced, and forms in fact the principal disease. A nearer approach to this condition is found in the liver than in the lung—in fact, an exact counterpart of it is sometimes seen in cirrhosis, where the fibrous development of Glisson's capsule not only squeezes the tissues into little nodules, but sometimes destroys it so that no healthy tissue is left visible to the naked eye. Thus, particularly towards the surface, is seen occasionally in this disease of the liver, white masses of fibrous tissue of considerable dimensions, and in which only by the microscope can any remains of the normal structure be discerned. Apparently a similar change occurs in these forms of morbid kidney, and of a like chronic kind.

The same condition is found sometimes in the kidneys connected with bladder disease and where a chronic inflammation has taken place. Lately I examined the kidneys of a man who had died of stone. They presented an appearance very common in such cases. The pelvis was dilated, and full of muco-purulent fluid, the structure of the organ breaking down and in parts suppurating. A section showed some parts white and others red. The former had a swollen appearance, and projected from the surface, and were advancing towards a state of suppuration. In the red parts the tubes could be made out, and were full of granular matter. The white portions to the eye were like pieces of hardened brain, and only on very careful dissection could any trace of structure be made out, the whole being in fact one solid mass of hardened lymph. Towards the surface the fibrous structure was disappearing, and suppuration was commencing. When carefully torn up, a piece presented nothing but fibrous tissue and fibre-cells in all stages of development. The nature of the inflammation, in this particular case, was shown by the condition of the capsule, which was closely adherent to the kidney and the parts around, very vascular, and three times its natural thickness and density. I allude to this case as showing the identity of the morbid process with the varieties of kidney I have just mentioned. In this case a plastic inflammation of the whole kidney had occurred, which had completely albuminised the structure, and the same had occurred in the organs I have described.

*Morbid Anatomy of the Fatty Kidney.*—The subject of fatty degeneration has of late very much occupied the attention of pathologists, and the comparative novelty of its discovery has caused it to be looked for as a suitable explanation of many previously obscure conditions. Much valuable information has been gained by these investigations, but the full pathological interpretation of the condition has yet to be fully understood. It is sufficiently clear, that a fatty state of the body in general, and the viscera in particular, is not one of health. Age has a tendency to the production of fat and disease unde

particular circumstances. In my own note-book, I have a great number of cases where this condition has presented itself, both in particular organs and in a general manner. Thus, as a rule, in all bed-ridden persons, particularly if advanced in life, fatty degeneration occurs; or where confined by some chronic disease, excepting always, of course, cases where a very rapid and exhausting malady is going on. Thus it is mostly seen in long bed-ridden paralysed patients, in those long confined with scrofulous and cancerous affections. In the latter diseases, I have not time to discuss the question, why wasting at one time is produced, and at another a fatty degeneration; it is sufficient to remark, that this condition is constantly found. In patients who have suffered from any marked morbid state of the blood, it is particularly liable to happen, such as after puerperal fever or common fever. In two or three cases of sudden death, during convalescence from this latter disease, a fatty state of the heart has existed; one of the most marked causes, however, of fatty degeneration, is to be found in intemperance. This is mentioned by Bright in a former volume of these Reports, and seems to result from a constant imbibition of malt liquors rather than spirits. For this reason, in all those who have died from delirium tremens, induced by intemperate habits, I have found a fatty degeneration of organs. A fatty degeneration may be local, as in the liver of phthisis. I have alluded thus to the subject of fatty degeneration, because without its general consideration, that of the kidney cannot specially be understood, for I am sure that it has been by a too exclusive regard to one organ, that the true pathology of the particular case has been often misinterpreted. A fatty liver cannot be understood without a general reference to the body at large, much less be put down as a primary morbid condition; neither can a fatty heart be connected of necessity with sudden death, on account of the investigation of fatal cases where this has occurred, seeing that in the majority of cases where a fatty heart has been found, death has not occurred immediately through the failure of that organ. In the same manner, a fatty kidney may indicate nothing of itself. When I speak of this condition, I use the term exclusively to designate those cases where the fatty state seems the only morbid condition. It may be found existing in diseased kidneys. Thus the albuminous deposit in the large white kidney often undergoes fatty degeneration; so, again, we may find the small granular kidney very fatty. The state, however, I mean to refer to, is a simple fatty one, without any tendency to Bright's or other disease; indeed, the two conditions have nothing to do with each other. A fatty state may exist in an organ otherwise healthy, or in a diseased one. Bright's disease of the kidney may occur without the presence of any fat; and, on the other hand, a fatty state is often found, which can only be looked upon in the light of a degeneration. In certain subjects, particularly those under the conditions above mentioned, directly the body is opened, a general fatty state is recognized both in the integuments and in the interior, about

the intestines, &c.; in each case the viscera are found very frequently to contain more than usual fat. I never found a kidney containing very much fat, whether otherwise diseased or not, without very visible traces of the same condition existing elsewhere. All this shows a general pathological cause for it, rather than a special one in the organ itself, and that when it occurs in a morbid kidney it is altogether secondary to the disease itself. It may be true that Bright's disease may indirectly be connected with a train of causes which have resulted in the fatty degeneration; but then other organs are seen to share the fat with the kidney. I do not speak of every slight or local changes in a kidney, where a tube here or there may contain some fat. This may arise from a degeneration confined to that part from a special cause. When I speak of true fatty kidney, I allude to an organ which is in an analogous condition to that of the liver, where we suppose that the mere superaddition of fat has produced the morbid state: in fact, an organ similar to the permanent state of that found in the dog or cat, where it presents an appearance healthy to the naked eye, but yet containing an abundance of fat. So I have seen a remarkably fatty kidney in the human body pronounced healthy, because it was not otherwise structurally diseased. Thus, also, a very fatty liver may be overlooked, unless the fat be in such quantity as to alter perceptibly its colour and consistence; and, speaking of this organ, as we look upon the fat so commonly found in the nutmeg liver or cirrhosed liver as a mere consequence or complication of a more serious affection, and the true fatty liver where the organ only contains an excess of fat, so in an analogous manner do we speak of fatty kidney. In these cases, then, the cells are seen to contain many oil globules, and which sometimes burst, setting their contents free, which are found in drops throughout the tubes. In the large white kidney the fat is commonly found mixed with the exudation, as if this had undergone degeneration, and the separate granular corpuscles are found to have drops of oil within them. In the small degenerated kidney we often find the tubes very diseased, altered in shape, and in parts devoid of epithelium, and containing only granular matter and fat.—*Guy's Hospital Reports*, Vol. viii, *p.* 232.

## 63.—ON THE DROPSY OF BRIGHT'S DISEASE.

By Dr. Samuel Wilks.

It was in the investigation of dropsy that Bright was first led to his discovery. As a symptom of renal disease, dropsy is found in a greater or less degree at some period, though not invariably so. In the first form of the disease, when the inflammation is going on, to the enlargement of the organ, dropsy is a uniform symptom. In bad cases it is more excessive than in any other malady, and much more general. This universal anasarca, or its existence in all parts of the body, constitutes the peculiarity of renal dropsy, and testifies as to its

immediate dependence upon a general cause, that is, poverty of the blood. Thus we find among the first parts which become dropsical are the ankles, the face, with the conjunctiva, and the genital organs. Indeed, in the majority of instances, if we see the scrotum and penis included in a dropsical condition, we may safely conclude the presence of renal disease. The cause of dropsy, in many cases, as in obstruction to the flow of blood through the chest in lung or heart diseases, is simply mechanical, or in ascites from a cirrhosis of the liver; but in renal disease it depends upon the condition of the blood, and thus its universality, for a watery conjunctiva or œdematous scrotum could but rarely depend upon a local cause. This state of the blood is produced by two causes; first, by the scanty secretion of urine, by which much water is retained in the blood, and secondly, by the flowing away of its albumen, whereby also its specific gravity is much diminished. From the first cause a repletion of the vessels would occur, and, of necessity a dropsy ensue. This would be in part mechanical, and allied to the other varieties of the affection. It is, however, from the poverty of the blood, arising from the drain of albumen, that the dropsy generally occurs, and for the same reason as œdema of the leg is often found in chlorosis. Of the two causes which operate to produce a watery state of the blood, a scanty secretion of fluid by the kidney, and a plentiful secretion of albumen by the same organ, I should say the latter was the more influential of the two. With a very scanty secretion two results follow which are liable to produce a transudation through the vessels, a diminished specific gravity of the blood from the retained water, and an increased pressure from its superabundance; and yet I think the effect of these is less in the production of dropsy than the discharge of albumen which is constantly taking place from the vital fluid. I think my experience shows that a highly albuminous urine, even with a considerable amount of fluid, is more likely to be accompanied by dropsy than where a less secretion occurs, and consequently less albumen is thrown off. Little, however, can be said on this point, as an accurate measurement of the albumen is difficult, and so many other causes operate to influence the result. Thus, if the urine be plentiful and its contained salts abundant, but albumen at the same time be taken from the blood, the specific gravity of the latter fluid is lowered, and a disposition to dropsy is produced: whereas, if the urinary secretion be scanty, or all but suppressed, generally a diarrhœa is set up, or some other vicarious action, which may relieve the blood, and so the immediate consequence in this respect is rarely seen. It is not common, however, to have dropsy to any amount in the chronic degeneration of the kidney, even if for days together the patient have his urine suppressed, and die from its toxœmic effect. On the other hand, dropsy is constantly seen to exist with a normal amount of urine secreted, leaving the abstraction of albumen from the blood as the sole cause of its production; remembering, however, always, a softened and relaxed state of the tissues,

which may assist the transudation of fluid. It is clear, then, why, in the first form of inflammatory disease, with a scanty albuminous urine, excessive dropsy should exist, and why, in the second form of chronic degeneration, where a plentiful secretion exists with but a slightly albuminous state, none, or but occasional dropsy should be. In this latter form, if, from cold or other cause, a dropsy come on, the urinary secretion is at the same time seen to be much interfered with. We see, too, the reason why Bright, in the first instance, coupled dropsy with albuminous urine, and how it was subsequent investigation which discovered the diseased kidney where neither of these symptoms had existed, or at least been observed. That the dropsy is dependent immediately upon the watery condition of the blood, has been proved satisfactorily since the first analysis of Bostock, and it is thus made to be in a similar condition to that of chlorosis. The experience of the symptoms, and the beneficial result of the treatment by iron, all point to the similarity of the two conditions. There is one symptom, however, so remarkable in chlorosis, which is rarely found in Bright's disease, I mean the cardiac bruit de soufflet and the bruit de diable. I have constantly placed my ear to the heart of very anemic cases of Bright's disease, expecting to hear a soft systolic murmur at the aorta, but have failed.—*Guy's Hospital Reports*, Vol. viii., *p.* 276.

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## 64.—ON BRIGHT'S DISEASE.

By Dr. H. Bence Jones, F.R.S., Physician to St. George's Hospital.

[In this lecture Dr. Jones dwells upon the peculiarities of the urine in this disease, relating chiefly to prognosis and treatment.]

Congestion causes the diffusion of albumen, fibrin, and blood-globules, and a decrease in the specific gravity of the urine at the same time occurs, in consequence, probably, of the congestion hindering the escape of some substances out of the blood. By Bright's disease, precisely the same effect on the urine is produced. Between the urine passed by a patient after the cholera, or after scarlet fever, and the urine of a patient with Bright's disease, I see no difference whatever, either chemically or microscopically. The low specific gravity in Bright's disease is to me produced by exactly the same cause as the low specific gravity when the kidneys are inflamed after injury of the spine, or when they are congested in cases of chylous urine. Generally, the decrease of specific gravity may be taken as the index of the extent to which the kidney is affected; that is, the lower the specific gravity of the urine when albumen is present, the greater the alteration in the circulation through the kidney, the greater the congestion in chylous urine and after cholera; the greater the inflammation in spinal cases, and the greater the so-called degeneration (the effect of congestion and imflammation) in Bright's disease.

There are two opposite classes of cases of Bright's disease which

require to be pointed out as exceptions to this law. In one class of cases there is considerable thirst, and very large quantities of urine are passed daily, and the specific gravity is consequently thereby reduced. In the opposite class of cases, the quantity of urine passed daily is exceedingly small, and hence the specific gravity rises sometimes very considerably above the healthy standard.

I shall illustrate both these classes by some examples.

A medical man was sent to me from the country, under the impression that he was suffering from diabetes as well as Bright's disease. He had no urine with him, and I asked him to come the next morning with the urine made at night. The following day he brought four quart bottles full, which he said, was about the usual quantity passed in twelve hours. It contained no sugar; had a specific gravity of 1006, and was highly albuminous.

A woman, aged 43, who had œdema of the legs two months, was in the habit of passing three quarts of urine in twenty-four hours; the specific gravity usually was from 1007 to 1010. She always complained of great thirst. On one occasion, the quantity of urine was three quarts in fourteen hours; the specific gravity was then 1004.

A farmer, aged 50, was brought to me for diabetes. The urine was highly albuminous, contained no trace of sugar. The usual quantity was seven pints in twenty-four hours; the specific gravity was 1010. His only complaint was of headache.

Many similar cases I might bring before you; but these are sufficient to show that the quantity of urine must be taken into account before any conclusions as to the extent of the degeneration of the kidneys can be drawn from the specific gravity of the urine.

I pass on to the opposite exception, to the law that the specific gravity indicates the degree of disease of the kidney.

A woman, aged 38, had swelling of the legs for three months. She had a healthy, florid look. The dropsy was excessive. At one period of her illness, only three ounces of urine were secreted during one night; the specific gravity was 1036·2. It was intensely albuminous, loaded with urates, and contained many fibrinous casts. For six weeks after her admission into the hospital, the quantity of urine was seldom more than half-a-pint in twenty-four hours; the specific gravity was from 1027 to 1033. In six weeks more, the urine became more plentiful, specific gravity 1017·4. She gradually became comatose, and died.

A woman, aged 21, had swelling of the legs for ten months. They were always most swelled when the catamenia were present. The face was flushed and full. In twenty-four hours, half-a-pint of urine was made; it was exceedingly albuminous, loaded with urates, specific gravity 1035. She complained of sickness and drowsiness. By aperients and the vapour-bath, the urine became clear. The specific gravity fell to 1030, and the dropsy was lessened. After she left the hospital, I lost all knowledge of the progress of the disease.

Other cases like these I have seen, and from them I cannot but warn you from founding a favourable prognosis from urine of high specific gravity, even when urates are precipitated.

These exceptions lessen considerably the value of the knowledge to be derived from the specific gravity of albuminous urine; but, by accurately observing the quantity of urine as well as its weight, you may approximately determine the amount of congestion in the kidney; and, if this be frequently determined, the existence and degree of the disease of the kidney may be foretold.

Having spoken of the quantity and specific gravity of the urine in Bright's disease, I will pass on to the quantity of albumen in the urine.

In my last lecture, on chylous urine, I showed you how rapidly the urine may vary in the quantity of albumen which it contains; and in this, as well as in at least one other disease (mollities ossium), large quantities of albuminous substance may be thrown out by the urine without the existence of any serious disease of the kidney. The quantity of albumen is a test of the amount of congestion of the kidney at that time; and if at all times a large quantity is found in the urine, it indicates that the kidney is always highly congested, and it becomes most probable that this is produced by organic changes in the texture of the kidney. Thus the amount of albumen in the urine is often considered as bearing a direct relation to the amount of degeneration in the kidney. If this were so, then little albumen in the urine would, on the other hand, indicate slight affection of the kidney; whereas there may be the most extensive disease of the kidney, and some cause may be in action which temporarily prevents the congestion of the kidney, (as, for example, some determination of blood to some other part of the body); then the amount of albumen in the urine may be very much diminished, and sometimes none at all may be detectible.

A labourer, 55 years old, was admitted on the eighth day, of acute pleurisy of the left side. The heart was displaced, the cavity of the chest being full. There was a history of œdema some months previously, and as his heart was healthy, the urine was carefully examined, but no trace of albumen could be found. The effusion increased; the day but one after his admission the urine was again examined; it was quite free from albumen; specific gravity 1025: it was not nearly so deep coloured as it usually is found to be in cases of pleurisy. A week after his admission the difficulty of breathing increased; he had an epileptic fit; the urine was still not deep-coloured, contained a little urate of ammonia; specific gravity 1022; it gave a precipitate of earthy phosphates by heat, nearly clearing with a drop of dilute hydrochloric acid; nitric acid alone gave a slight cloudiness. On account of the difficulty of breathing, paracentesis was performed; eighteen ounces of purulent fluid were drawn off. Shortly after the operation, the breathing was free; two hours after

the pulse was irregular and unequal, and the difficulty of breathing was nearly as bad as before. During the night he had three attacks of convulsions; in the last he died.

Feb. 9, 1847.—On examination, both kidneys were highly granular.

Sometimes the albumen is absent only at the commencement of an acute inflammation of another part.

A youth, aged 16, was in St. George's Hospital, under Dr. Chambers. He had some œdema and much fever, with rigors. In a day or two he complained of excessive pain in the left side; the urine did not coagulate with heat alone, and very slightly with nitric acid. In four days the heart was pushed to the right of the sternum; the fever was diminished; the urine was more coagulable by heat and nitric acid; one specimen had specific gravity 1015, another 1010. At the end of another fortnight the urine remained still coagulable by heat and acid. On account of the difficulty of breathing, paracentesis was performed, and about four ounces of pus were drawn off from the chest; the difficulty of breathing increased, and he died forty-eight hours after the operation.

When the capsules of both kidneys were removed, the surface appeared quite smooth; the vessels were injected; the substance looked more white than natural. On section being made, there was an increase of cortical structure, which was much more mottled than natural.

These, and many such cases, prove that the quantity of albumen does not indicate the amount of disease in the kidney, but it does show the amount of congestion at the time of the observation. A highly diseased kidney may be very slightly, or not at all congested, and a highly congested kidney may be very slightly diseased. The quantity of albumen may be very small in the first case, and very great in the last.

The general rule that the quantity of albumen is proportioned to the state of the congestion of the kidney, is of great importance for treatment and prognosis; and the exceptional cases mentioned above only confirm the general rule, that the quantity of albumen indicates the degree of congestion, and not the degree of degeneration. Such cases are also instructive, because they show the necessity for making more than one or two examinations for albumen before it is concluded that no disease of the kidneys exists.

In the first of the two last cases, I have mentioned the pale colour of the urine at the time when acute inflammation of the pleura was present. This paleness of colour may be very frequently observed when blood is not present to discolour the urine. When the kidneys are healthy, acute inflammation causes the urine to become deep-coloured, almost proportionately to the intensity of the inflammation; but when the kidneys are diseased this proportion ceases. In Bright's disease the most intense inflammation of a serous membrane may exist, and yet the urine throughout may show no alteration of colour or appearance.

Among many examples of this, perhaps one of the most striking that I have seen was in a medical man, who for many months had pale, straw-coloured urine, highly albuminous, specific gravity about 1010. He was attacked by acute pericarditis, with delirium and loss of sleep. His symptoms exactly resembled those which occasionally occur in the pericarditis of rheumatic fever. He died about the tenth day of the inflammation; the urine throughout presented no change whatever in colour or specific gravity; it had no resemblance to the urine of acute inflammation.

Such, then, are some of the facts which may be derived from observation of the specific gravity, the coagulability, and the colour of the urine, in cases of disease of the kidney. You will see from this, that chemistry cannot tell the exact state in which the kidney will be found after death, but that it does give much help in determining the state of the circulation through the kidney during life.

That which chemistry is unable to effect, the microscope professes to make clear. According to the microscopic appearances of the urine, the appearances observed in the kidney after death have been subdivided into many different diseases; and, instead of a single disease in different states of congestion and stages of deposit, we are asked to recognise as many different diseases as there are different microscopic appearances in the urine. Thus, in urine may be found, 1st, tube-casts, with recent gland-cells; 2ndly, waxy tube-casts; 3rdly, fatty tube-casts; 4thly, casts with fibrin; 5thly, casts with pus or blood. These are said to be the distinctive signs of nearly as many distinct diseases. First, of acute or chronic desquamative nephritis. The second disease is, waxy degeneration of the kidney. The third, fatty degeneration; and this is divided into two perfectly distinct diseases,—granular fatty degeneration, and mottled fatty degeneration. The fourth disease, corresponding to the fourth microscopic appearance, is acute and chronic non-desquamative nephritis. The fifth disease is suppurative nephritis. This subdivision can scarcely fail to remind you of the proposed subdivisions of some cutaneous diseases founded on the appearances of the eruption. There is no practical gain in subdividing scabies or erysipelas into different diseases, according to the appearances of the eruption. What, think you, was gained by assuming as many different syphilitic poisons as there were different forms of secondary syphilitic eruption? I shall keep to the simpler view, which appears to me to be truer, simpler, and more practical,—a single disease, in different states and stages of congestion, deposit, and wasting, not arising from the elimination of any peculiar animal poison, but produced by a diseased state of nutrition, leading to the deposit of fibrin, fat, and pus, and ultimately to the wasting of the structure of the organ.

Such are the broadest outlines of the different views of Bright's disease. There are, at present, four cases of this disease under my care in the hospital. You will see how little assistance, in regard to

their treatment, can be derived from the microscopic examination of the urine. Nevertheless, with the hope of arriving at more certain knowledge, the microscopic appearances of the urine should be carefully observed. You may thus help to determine whether there is a vital process of desquamation; a rapid formation and shedding of renal gland-cells; whether the so-called large granular fat kidney and the small contracted kidney are the result of two essentially different morbid processes; whether the epithelium in this last state is disintegrated and swept away, and in the former state transformed into fat; whether the smooth, mottled, fatty kidney bears no relation to the granular fat kidney, or whether the deposit of fat is not unessential in both states of kidney, appearing as pus may appear in any stage or state of the disease.

Those of you who may have the opportunity of seeing much of scarlet fever will, by careful microscopic examination of the urine, be able to add importantly to our knowledge. The late Dr. Miller, than whom I know no one who had so carefully watched the sequelæ of scarlet fever, and from whom if his life had been spared, more valuable knowledge would have been obtained, told me that he had seen in the urine every variety of microscopic appearance attributed to Bright's disease, and that in *post-mortem* examinations no distinction could be made, for all forms of deposit were to be found after scarlet fever. The microscopical questions regarding the state of the urine after scarlet fever will repay the minutest and most extended research. Whatever you observe note it carefully, and publish it slowly, for premature publication leads only to corrections and ends in disputes.

You will say, what is to guide me in my prognosis and treatment? I reply, do not trust alone to the microscopic appearances in the urine, but take the case as a whole. In a case of consumption, it is rarely that you can determine by the stethoscope alone the course which the disease will follow, or the best treatment to be adopted. The stethoscope may give most important assistance, but the history, the general symptoms, the special circumstances, will still more correctly determine your judgment as to the duration of the case and the most suitable treatment. So, also, in renal diseases. The microscopic examination may give most valuable knowledge regarding the state of the kidney, *e.g.*, the pus may indicate suppurative inflammation; the blood, a loaded state of vessels; the fibrinous casts, the degree of recent congestion; the fatty matter, the duration, perhaps, of the evil; but it is far more important to take all the features of the case than to make the microscope the sole foundation for your prognosis and treatment.

In albuminuria as in other diseases, take the history first. If you can trace the complaint to scarlet fever, to sudden cold, or to pregnancy, the chance of recovery is far more favourable than if the disease has insensibly approached. I could give you many instances of recovery where the disease commenced from such causes; but I

know of no perfect recoveries where a bad state of health has given rise to disease of the kidney as a secondary consequence of a previous cachectic state.—*Medical Times and Gazette, Nov.* 26, 1853, *p.* 545.

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## 65.—ON ALBUMINURIA.

By Dr. E. A. Parkes, Professor of Clinical Medicine at University College.

[From some interesting experiments by Dr. Parkes, it is shown that we must not always consider that albumen in the urine proves the existence of Bright's disease, far from it. From certain conditions of the kidney, such as inflammation and hyperemia, &c., albumen may appear in the urine. These are cases of "*blood-albuminuria.*" But there is another and far more important class of cases in which albumen appears. These are cases of "*food-albuminuria.*"]

What now is the importance of this "food-albuminuria?" Is it merely an attendant on advanced kidney-degeneration, when the vessels and membranes of that organ are so diseased as to allow the fresh accession of albumen taken with the food rapidly to pass through them? Is it merely, that after food, an increased congestion of the kidney takes place, and therefore increased albuminuria?

I do not feel anxious to answer this question definitely at present. The facts already known are too few in number. But some discussion on it may not be uninteresting.

1. It is quite certain, that the food-albuminuria may occur in cases in which the renal disease is slight, as well as in advanced cases.

2. After food there may be increased congestion of the kidneys. But, if so, and if the increase of the albumen is owing to this, why should the water of the urine be sometimes, perhaps often diminished, and why should not the other solids of the urine observe an equal increase with the albumen?

3. After food the albumen of the blood may be increased in quantity, the circulation may be quickened, and thus, even without actual congestion of the kidneys, more albumen may pass through its capillaries, especially if the kidneys' structures are very much diseased. But, in answer to this, it may be objected, that the increase in the force of the circulation is inconsiderable; unless a vast quantity of stimulating food be taken, and that even if it were greatly augmented, one does not see how this should so especially affect the albumen in the urine. With regard to increase of the albumen in the blood after meals, very few comparative experiments have yet been made. In animals long deprived of food, the albumen has been found diminished, as compared with the amount present after food; but whether in the human subject, after a common meal, any difference will be found in the composition of the blood from the ingestion of some two or three ounces of albuminous food, is not yet certain. I have made some experiments

on this point in two cases of diabetes, and have found, that, in this disease at any rate, the per centage of the albumen in the venous blood-serum is not augmented after food. Admitting, however, that the albumen of the blood is augmented after meals, perhaps the union of these two conditions (increased activity of the circulation, with increase of albumen in the blood), may account for the increase of the albumen in the urine. It is certainly difficult to disprove this supposition with the few facts already known.

4. Another supposition presents itself, as difficult, at present, to establish as any of the former conjectures, but still carrying with it, in my mind, at any rate, a certain amount of probability: it is this,—we know that during the process of digestion in the stomach, the albuminous substances undergo extraordinary changes. We also know, that during the transit of the blood through the liver, the fibrin and albumen undergo still further modifications; so that, according to to Lehmann, thirty per cent. of the albumen entering the liver in the portal blood, disappears in that organ, and is not to be found in the blood of the hepatic vein. The liver is not to be considered as a mere maker of sugar, or of bile, but as a most potent laboratory, exerting an overwhelming influence on every digested aliment which enters it, and the influence exerted on the albuminous aliments is not the least important.

To these facts I will now add another of a different order. If crude albumen be taken and introduced at once into the circulation, through the jugular vein, it is incapable of assimilation, and is rapidly excreted in the urine, and a temporary albuminuria is thus produced. This singular result, for which, as for so many beautiful experiments, we have to thank Bernard, proves that the albumen must be prepared in some way before it reaches the lungs, in order that it may undergo certain changes during respiration, which then probably render it in a fit state to be assimilated by the tissues.

The inference now presents itself, may it not be possible that by some failure in its preparation, either in the stomach or in the liver, the albumen enters the right side of the heart, still crude, and in a condition similar to that in which it would have been had it been introduced through the jugular vein; and, thus being unassimilatable, is it not excreted, as in Bernard's experiment, by that ready outlet the kidney?

In support of such a supposition, we have the facts, that many cases of kidney disease seem to be most probably of blood origin, and that among the common antecedents of Bright's disease are circumstances of diet or mode of living which would be likely to impair the processes which should go on in the stomach or liver. In how many cases of Bright's disease have dyspeptic symptoms been present for a long time before renal signs have shown themselves. In how many other cases are signs of liver diseases coincident with the renal signs. In how many *post-mortem* examinations, although no liver disease has

been suspected, do we find evidence that for a length of time the structure of this organ has been seriously diseased.

It is obvious, that all these considerations give us nothing in the way of proof, though they may increase the probability of the hypothesis. I do not see, indeed, how, except by extended observation, and perhaps by experiments on animals, the hypothesis can be proved. If it could be proved, however, it would be highly important, as it might be found to have an extended application, far beyond the range of kidney affections. But I will not dwell upon it any longer, and the basis of facts is narrow. All we can venture to say now is, that, whatever may be the explanation of it, it is certain that in some cases of Bright's disease the excretion of albumen in the urine is influenced in an extraordinary way by food.—*Med. Times and Gaz., April* 22, 1854, *p.* 397.

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## 66.—ON DIABETES.

By Dr. H. Bence Jones, F.R.S., &c.

[There is no *one* test to be relied upon for the detection of sugar in urine. The copper test is most commonly employed, but as other substances, beside diabetic sugar, will reduce the oxide of copper, this alone is not sufficient. The same remarks apply to the microscopic test, for torulæ being present in the urine does not always prove the presence of sugar. With regard to the disease itself,]

It has been said that it exists in old people, to a slight extent, always. A gentleman, who, I hope, will pursue this subject and publish his own results, has written to me to say that the most careful repetition of the experiments made by M. Dechambre, in the Salpetrière, did not give the same results. Old people are not necessarily diabetic; but, in referring to the notes of many cases of diabetes which I have seen during the last two or three years, I find, out of twenty-nine cases of which I kept notes, eleven were above sixty years of age, and six of these eleven above seventy years. Nor is this the most important fact regarding these cases; but it appears to me, that the disease in old age is generally milder and more chronic than at other periods of life.

[Next to the old, it has been said that fat people best resist the progress of this disease. On the *treatment*, Dr. Jones remarks:]

First regarding the use of wine and porter. M. Bouchardat has long recommended claret in this disease, and to the amount of two bottles even in the day. Dr. Prout used to permit his patients to take porter. Being desirous of determining which of these directions was to be preferred, I made some experiments regarding the amount of saccharine matter and acid in wine and beer. I have come to the conclusion, that claret is usually perfectly free from all saccharine matter. The same may be said of Burgundy, Rhine wine, and Moselle wine.

Very rarely, indeed, a sherry may be met with which contains no sugar, but generally sherry, port, Madeira, Marsala, contain amounts of sugar varying from 2 grs. to 34 grs. to the ounce. The best porter gave me from 23 grs. to 40 grs. of saccharine matter to the ounce; the best stout from 45 grs. to 64 grs.; the best bitter ale from 14 grs. to 130 grs. to the ounce. Hence it appears that claret will not increase the sugar in the urine, while porter will do so considerably. Direct experiment with diabetic urine has also proved the same fact.

Spirits, as brandy, whisky, rum, usually contain no trace of sugar, and hence they may be prescribed for diabetic patients.

M. Bouchardat, who has seen more of this disease than any one, says that milk is not allowable. The most careful experiments lead me to the opinion that milk scarcely increases the sugar in the urine, even when it is the sole article of diet.

[In the case of a farmer, aged 37, under Dr. Jones's treatment, "at the end of two complete days, in which milk and nothing else was taken, only two grains of sugar existed in each ounce of urine." The patient said]

"My kidneys and bladder are always most comfortable under milk diet, but I frequently have a little heartburn; but I do not feel the same morbid irritability of stomach that I do when living entirely on animal food." As I wished still further to try the effect of milk diet, he undertook to take nothing else for a week. The daily quantity was from 100 oz. to 130 oz., and on one day 149 oz. He passed from 50 oz to 90 oz. of urine.

July 23rd. His pulse was 72; his tongue clean; he looked florid and well; had no irritation of the bladder; could take tolerable exercise; had gained 8 lb. in weight, being now 12 st. 10 lb. He said that from the time of his first visit to me, "all the flour he had eaten would not one quarter fill his hat, and he had not taken a pocketful of vegetables." The urine was perfectly free from sugar.

From this case, it is most probable that milk-sugar is not easily converted into glucose in the human body. I have, therefore, constantly permitted it to be taken by diabetic patients. It is apt to give rise to constipation, and this has been best obviated by taking an equal quantity of fluid magnesia with the milk in the morning.

[As one of the terminations of diabetes is sometimes phthisis, Dr. Jones was led to prescribe cod-liver oil. He says:]

To a young woman in St. George's Hospital I gave an ounce daily for three months. In this time she gained eleven pounds in weight. her thirst so diminished that she passed only $2\frac{1}{2}$ pints of urine in twenty-four hours, instead of twelve pints.

A man, 40 years old, came into the hospital passing seven pints of urine in twenty-four hours. He was put on cod-liver oil, $1\frac{1}{2}$ ounces

in the day, with a drachm of liquor potassæ. In the first fortnight he lost four pounds and a-half. He then took three ounces of oil in the day, with two drachms of liquor potassæ, and in a fortnight he had gained eight pounds. The quantity of urine was reduced to three pints. At the end of five weeks from his admission, he went out at his own request, saying he was stronger than he had been for eight months, and that he was quite well. The urine still contained a small quantity of sugar.

An enormous amount of cod-liver oil may be taken in diabetes; thus one of my patients took, in five weeks, eight pints fourteen and a-half ounces.

[Another patient who took 8 pints and $14\frac{1}{2}$ ounces of cod-liver oil in five weeks, increased in weight, and the urine decreased from five pints, specific gravity 1040, to $2\frac{1}{2}$ pints, specific gravity 1032; though the sugar never disappeared. Dr. Jones enumerates a host of remedies which he has tried in diabetes, but no specific has yet been found. He observes:]

When we look at the morbid anatomy, when minute microscopical examination can give no clue to the seat of the disease, when it pronounces that the stomach and viscera are healthy, when it indicates that a functional error has ended life, we are led to hope that further investigation (some remarkable experiments have lately been published by Dr. Harley on the artificial production of diabetes in animals by the action of stimulants injected into the vena portæ) may lead to the perfect theory of the disease. and by this to the radical cure, instead of the palliative treatment, of this most interesting disorder.—*Medical Times and Gazette, Feb.* 4, 1854, *p.* 101.

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## 67.—ACTION OF VARIOUS REMEDIES IN DIABETES.

By Dr. W. R. Basham, Physician to Westminster Hospital.

[In the cases of diabetes in which these remedies were employed, the principle rested on the opinion that "diabetes is a disorder of the digestive and assimilative functions, in which the power of conversion and appropriation of the farinaceous and amylaceous elements of food is singularly perverted and disturbed." Sugar or glucose being rapidly formed and absorbed and quickly passing into the circulation, is, without further metamorphosis, excreted by the kidneys. The regimen consisted in diminishing the starch and fecula of the food, and employing the nitrogenous class of aliments.]

The medicinal remedies may be classed as follows, the more novel ones being placed first:—

1. The *permanganate of potass*, hypothetically to supply the stomach with an increased amount of oxygen, by which the metamorphosis of the farinaceous material should be hastened forward into a higher stage of oxidation than that of sugar, permanganate of potass, as is well

known, out of the body, converting sugar into oxalic acid. Mr. Sampson, who first employed it (*Braithwaite's Retrospect*, Vol. xxvii, p. 120) states that his attention was drawn to this salt when seeking for some remedy which should give out oxygen when taken into the stomach, with the view of assisting the imperfect action of the digestive and assimilative functions. He records a case in which it appeared beneficial. We must not overlook the fact, however, that a prominent error in the digestive process of the diabetic patient is the premature and rapid conversion of the fecula of food into sugar: it is hasty and imperfect—not tedious or protracted.

2. Agents that hypothetically should retard and delay the formation of glucose in the stomach. Certain substances possess the property of arresting the saccharine, vinous, and acetous fermentations. If glycerine be added to a half-fermented infusion of malt, the further formation of acid is checked; and I have found that a mixture of potato starch and dilute nitric acid undergoes chemical conversion into dextrine and glucose more slowly, and is all but arrested if glycerine be previously mixed with the starch. *Glycerine, creosote, and sulphite of soda* have been tried on this principle.

3. *Opium and opiates*, to act on the nervous system; to diminish the excitement and irritability of the nervous centres.

4. Remedies which relieve thirst and aid the digestive process by the supply of hydrochloric acid, and which tend indirectly to diminish the amount of fluid excreted by the kidneys, as recommended by Dr. Owen Rees. ('Medical Gazette,' vol. xl. p. 365.) *Hydrochloric and some vegetable acids.*

5. *Diaphoretics*, stimulating the palpably defective cutaneous secretion, and thus vicariously lessening the proportion of fluid to be excreted by the kidneys. Antimonials; warm baths; flannel clothing.

6. The use of *alkalies*, particularly ammonia; on the hypothesis of Mialhe, that the starch of food is equally converted into sugar by healthy and diabetic persons; but that in health it is metamorphosed and burnt off by the presence of alkalies, undergoing complete oxidation, and is ultimately discharged as carbonic acid from the lungs; but that in diabetes it is not oxidized owing to the deficiency of alkalies in the blood, the sugar without further change passing off by the kidneys.

These several remedies have never been administered in conjunction; and if in the same case two or more have been tried, a day or two has been allowed to elapse, that the observations recorded might be fairly deduced from the remedy employed.

[In the two cases in which it was employed, permanganate of potass proved an unfavourable remedy. In the second case it was discontinued, and the report proceeds:]

On the seventeenth day from admission the urine passed was four quarts and a half, and the specific gravity 1039. The skin had become

furfuraceous, and with very troublesome itching; the tongue continued red and glazed; much thirst and considerable flatus after eating, with distressing weight at præcordia, followed by gastralgia; the bowels had become sluggish. Saline draughts of the tartrate and phosphate of soda were given every morning. The diet remained the same, and he was ordered carbonate of ammonia, ten grains, with an ounce of infusion of prepared diosmæ every four hours, immediately after meals. The urine at this time contained 17·32 grains of sugar to the ounce; during the next six days the average specific gravity was 1039, and the daily quantity a little under four quarts.

On the thirtieth day from admission, and the thirteenth of taking the ammonia, the urine had diminished to a little more three quarts; specific gravity, 1036, and the amount of sugar 9·13 grains to the ounce. There was much less thirst, and the tongue was moist, becoming dry only during sleep. The odour of the breath remained the same, and the urine, although containing less sugar, and of lower specific gravity, possessed the same briar-like aroma as on admission.

The phosphate of soda and ammonia in twenty grain doses was added to the carbonate, and five days afterwards the specific gravity of the urine was 1033, and one sample of urine gave 6·5 grains of sugar, and another of the next day 8·45 grains to the ounce. These were evident symptoms of improvement, and the patient believed himself getting well. His mother came up from Devonshire, and upon her urgent wish he returned home with her. The treatment by alkalies in the latter period of this case is exhibited in the most favourable light, and we are entitled to infer that the smaller proportion of sugar, with concomitant indications of favourable progress, are to be deduced from the use of the alkali.

The next case, which was admitted in October of last year, also affords illustration of the advantage to be derived from an alkaline treatment, attention being at the same time paid to diet and regimen.

[Edward G., a carpenter, aged 48, was admitted in October, 1852, with the usual signs of aggravated diabetes.]

He was placed on carbonate of ammonia, ten grains; carbonate of potass, ten grains; and carui water, one ounce; to be taken after each meal. He had complained of some gastric uneasiness, flatulence, and eructations, while taking opium; these symptoms disappeared on taking the alkalies. The urine was at this time of a bright lemon-yellow, and, like the breath, exhaling an odour remarkably like chloroform, but not so powerful as on admission. The average daily quantity was seven and a half to eight quarts; twelve days after taking the alkaline remedies the urine was five quarts, and the specific gravity 1037, and the amount of sugar 7·53 grains to the ounce; crystals of oxalate of lime were detected by the microscope, and urea was recognised by nitric acid. The bowels were more regular; thirst much diminished, and had become less urgent even at night; the appetite was

less craving, but there was no improvement in the physical strength of the patient. He continued the alkalies, with the addition of hard-boiled eggs to his diet, and fish on alternate days, for a further period of nine days, when the specific gravity of the urine was 1038, and the quantity of sugar on two examinations was 6 and 6·5 grains to the ounce. He fancied himself a little better, and as he had been above two months in the hospital, he was desirous of going home, and trying what such a change might do for him. He died three months afterwards, reported from gradual exhaustion.

It would appear from this case that agents which out of the body possess the property of arresting the chemical conversion of sugar, exercise no remedial agency within the organism,—at least so far as to diminish the quantity of sugar excreted. It must not be forgotten, however, that observations on a single case are necessarily inconclusive, and particularly as the case just related was one of extreme severity. The action of opiates was at first favourable; the relief to the more distressing symptoms of thirst was evident; the urine became less abundant in consequence, but there was no diminution in the major morbid conditions; emaciation continued, and large quantities, although less than before, of sugar continued to be excreted by the kidneys. The alkaline treatment furnished the most favourable results,—a gradual diminution in the daily amount of urine and a proportionate decrease in the quantity of sugar present. When he first came under treatment the daily average of sugar passed was 11·25 ounces; after the alkaline treatment it had become reduced to 3·66 ounces in the twenty-four hours. Even this lesser quantity is a large amount of solid sugar to be formed out of the alimentary matters, chiefly animal, taken by the patient. Nevertheless, the great reduction in the amount of fluid excreted, as well as of sugar, formed while under the influence of alkalies, and the larger share of improvement in all respects witnessed as compared with the results observed to follow the use of opium, justify us in placing great reliance on remedies of this class.

[In the next case, the patient left the hospital improved. Diaphoretics, warm baths, and subsequently hydrochloric acid, formed the basis of the treatment. The quantity of urine passed in the twenty-four hours, on admission, was about six quarts, specific gravity 1032. His age was 38.]

He was placed on a meat diet; a warm bath each alternate day; three grains of Dover's powder three times a day, and five grains of the same, with five of the antimonial powder, at bed-time; saline draughts of the phosphate of soda and tartrate of potash were given to regulate the bowels. He continued this treatment for a fortnight, with great advantage. The tongue became moist during the day, and the thirst much relieved, being for the most part troublesome only at night time. The bowels acted regularly. The specific gravity of the

urine was reduced to 1026, and the presence of sugar, on one or two examinations, was very doubtful by Trommer's test; one sample contained a large proportion of urea. The branny exfoliation disappeared from the skin, and the surface of the body assumed a healthier appearance. Some dyspeptic symptoms, flatulent distension of the epigastrium, and gastrodynia, occurring, the antimonials and diaphoretics were discontinued; and he was ordered the dilute hydrochloric acid, in half-drachm doses, with compound infusion of orange-peel, to be take three times daily, a quarter of an hour before each meal; and yielding to his craving solicitation for bread, he was allowed six ounces daily, The dyspeptic symptoms disappeared; the tongue continued moist throughout the twenty-four hours. The urine averaged about three quarts: one day it was reduced to five pints, and the specific gravity was about 1025; the faintest indication of sugar by Trommer's test. Urea abounded in the urine, and the last two days of the patient's residence in the hospital a plentiful deposit of urates occurred. The patient appeared to have gained in flesh, and he represented himself to have acquired a good deal of his former vigour and activity. He showed himself once after he was discharged. His urine continued free from sugar.

[The connexion of glucosuria with gastric derangement would seem to be proved by the fact, that the remedies employed to remove the state of atonic dyspepsia diminished the quantity of the sugar in the urine. John O., aged 20, was admitted Jan. 1850. His urine amounted to ten quarts daily;]

The bowels were regulated with salines. He was placed on a meat diet; warm baths every other day, and the soap-and-opium pill, in five-grain doses, given night and morning. The opium affected the head so much that it was discontinued after the third day. He was then ordered fifteen grains of the carbonate of ammonia, three times a day, after each period of eating. The ward-book contains a daily register of the amount of urine, the specific gravity and the quantity of fluid drank, and three calculations of the quantity of sugar present during the six weeks that he took no other remedy but the alkali. The following is an abstract:—For the first ten days the daily average amount of urine was five quarts; average specific gravity, 1037; average daily drink, four quarts; proportion of sugar, present in the ounce, seven grains. The symptoms remained the same. He had a warm bath twice a week. In the second period of ten days the daily average of urine was four quarts; specific gravity 1035; daily drink, three quarts; and sugar calculated at about eight grains to the ounce. The patient notwithstanding had improved; the thirst was much less distressing; a moisture from time to time appeared on the forehead and in the axilla, and he felt stronger, and the flatulence and dyspeptic symptoms were much abated. During the next period of ten days the mean daily amount of urine was reduced to three quarts: specific

gravity 1030; mean daily drink was not recorded, the patient having twice forgotten to observe it; the amount of sugar had become reduced to three grains to the ounce. The patient's progress continued so satisfactory, that he was desirous of leaving the hospital to obtain a situation. He had gained much in bodily vigour; his appetite had become more natural; there were no unpleasant symptoms generated after eating; the bowels acted regularly; the tongue, although red, was clean and moist; and he stated that he had but little thirst, except when awaking from sleep, when he usually craved for water. The alkaline draughts were reduced to two daily, and he took four grains of the citrate of iron twice a-day. On taking the account of his symptoms during the last period of twelve days, the daily average of urine was three quarts; the specific gravity 1028; and the last sample of urine examined gave very doubtful results as to the presence of sugar. Urea was detected, and hydrochloric acid threw down, after standing a few hours, a pretty abundant crop of crystals of uric acid. This patient was lost sight of till the March of the following year, 1851, when he was again admitted. The symptoms of diabetes were as urgent as on his first admission, and in addition there were undoubted manifestations of tubercular disease in the lungs. There was dulness in the upper part of the right lung; bronchial respiration; strong vocal echo or resonance, and a copious expectoration of a yellow muco-purulent, but frothy sputa. The urine contained sugar in abundance, and numerous crystals of oxalate of lime were observed by the microscope. The patient left the hospital before the end of the week, and was not seen afterwards.

From this last point of view the case suggests an interesting reflection on the relation between imperfect digestion and assimilation, the formation of an unhealthy plasma, and the development of the tubercular diathesis.

These cases illustrate the comparative value of certain remedies proposed for the treatment of diabetes. It may be objected that the cases are not sufficiently numerous to permit any very definite conclusion as to their relative value. This is certainly true; but it may be observed that these cases are intended to illustrate the effects of particular remedies in individual cases, rather than to determine absolutely the positive value of any given plan of treatment. In this disease, accepting the amount of sugar excreted as constituting the essence of the malady, the object has been to ascertain the influence exercised in this respect by various medicinal agents.

*Results.*—[The principles upon which the remedies have been employed have been already expressed; and taking them in the order in which they have been classed, Dr. Basham finds that during the administration of the *permanganate of potass* in two cases, the quantity of sugar gradually increased. By those agents which were administered with the idea of retarding the conversion of the amylaceous elements of the food into sugar, *glycerine* and *sulphite of soda*, only

negative results could be deduced. By *opium* and *opiates* the amount of sugar was not materially lessened. *Hydrochloric acid* seemed to be of use in one case. It should be taken some minutes before food.]

*Diaphoretics.* These may be administered in conjunction with opium. The suppressed function of the skin is so very evident in all cases of diabetes, becoming harsh, wrinkled, and furfuraceous, patients seldom perspiring, and relief being always apparent as soon as any moisture is obtained on the surface, that remedies which excite or assist in promoting cutaneous excretion are always more or less indicated. Opium itself tends to promote diaphoresis, even when given alone, and its action in this respect may be much increased by combining it with antimonials. Flannel clothing should be strictly enjoined. Several of these cases illustrate the advantage of warm baths in conjunction with these agents.

*Ammonia and Alkalies.* The testimony of almost all writers on this disease is in favour of the remedial power of alkalies, particularly of the carbonate of ammonia; and the cases detailed corroborate the opinions of the most experienced physicians on their efficacy. One case presented the most satisfactory proofs of this plan of treatment, as the patient left the hospital temporarily cured. Of the mode of action of alkalies in this disease, little is known beyond what is hypothetical. Mialhe states that the blood in diabetes is deficient in alkaline salts; and he affirms that the ultimate conversion of the sugar formed out of the food, into products capable of being eliminated by the respiratory function, is not effected in consequence of the deficiency. To supply this defect should be the leading principle in the treatment of glucosuria. Whether we adopt this theory or not the fact remains indisputable, that a larger amount of relief is obtained by a steady and persevering use of ammonia and alkaline salts than can be procured by any other class of remedies. However, to render them efficient a well-regulated diet must be rigidly followed, and this should be limited as much as possible to animal or nitrogenous food. In the opinion of Bouchardat, clothing ranks next to diet. Moreover, the intelligent co-operation of the patient is absolutely necessary; for, unless he can be made to understand and enter into the object for which so strict a diet is prescribed, the effects of the alkaline plan of treatment will prove uncertain and unsatisfactory. The progress of cases in private practice is for the most part always more satisfactory than among hospital patients, principally for this reason, that intelligence lends force to the efforts of self-denial, and developes a more powerful control over the appetites and habits: the less educated are but little inclined to abstain even from things which they know to be positively injurious, and they with difficulty can be brought to comprehend the necessity for refraining from bread and vegetables, which their necessities have always taught them to be the staple articles of their food.

I cannot take leave of this subject of diabetes without referring to

Dr. Hassall's very valuable paper, in the 'Medico-Chirurgical Transactions,' on the Development of Torulæ in the Urine. When sugar is present in urine in smaller quantities than can be detected by the action of chemical re-agents, he has shown that the sporules of the sugar fungus, or even a higher stage of development, may be readily detected by the microscope.—*Lancet, Jan.* 21 *and* 28, *pp.* 66, 96.

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68.—*Diabetes treated by Alkalies.*—Sir H. Marsh, Bt., says:—"Amongst the agents capable of controlling the saccharine diathesis may be enumerated the alkalies. Of these, that which I have found the most useful is a combination of lime water, ammonia, and soda, given about an hour after each meal. Years ago I met the late Dr. Colles in consultation. The case was a severe one of diabetes; I asked him what he would propose to give. He replied, lime water and hartshorn. I asked him on what principle he proposed the remedy? His answer was: 'I know nothing about the principle, but I know the fact, that it does more good than any other medicine.' And so it did in the case we consulted about. I state the answer in his own words because it was so characteristic of that eminent man whose departure from amongst us we have all had such reason to deplore. In the observation, memory, and application of facts he greatly excelled."—*Dublin Quarterly Journal, Feb.* 1854, *p.* 7.

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69.—*Treatment of Diabetes Mellitus by Rennet.* By Dr. H. Fearnside, Physician to the Preston Dispensary.—[Dr. Gray, of Glasgow, mentions the use of rennet in this disease, and speaks from his experience of it in three cases very favourably. Dr. Fearnside was induced from these remarks to try it in the following case:]

Mrs H., a tall, spare woman, aged 55 years, had suffered from bad health for some time, without being able to indicate the existence of any special ailment. She had lost strength and flesh, and for some months before she fell under my notice, her debility had increased so much that it was with difficulty that she attended to her ordinary domestic duties. For a considerable time she had remarked that the quantity of urine passed was excessive, and she had been harassed by constant thirst. When I first saw her the expression of the countenance was haggard and anxious; the skin was hot and dry; the pulse quick; the tongue was loaded with a yellow fur; she complained of inodorous eructations, heartburn, and flatulence; the bowels were confined; the thirst inordinate. There was great muscular weakness, and severe pains in the back and limbs. The quantity of urine passed in twenty-four hours was five quarts; it was acid; specific gravity 1046, and gave evidence on the application of the potash and copper tests of containing sugar.

After the use of some gentle aperient medicine, the diluted mineral and hydrocyanic acids acids were prescribed, and with more or less regularity, were taken for some months. The diet was strictly limited to butcher-meat, fish, eggs, milk, and branbread. Fresh vegetables, as cabbages, were taken occasionally. Brandy and water was allowed as a beverage. A dose of rennet was taken after each meal.

A fortnight after the adoption of this plan, the patient became so conscious its good effects, that notwithstanding the vigorous exercise of self-denial which is required, no further exhortations from me were needed to ensure its steady employment. The digestion improved, the thirst subsided; the quantity of urine passed in twenty-four hours fell from five quarts to two quarts, and eventually to three pints, and its specific gravity descended in three months from 1046 to 1020. It has now for some months been free from sugar, although the patient has cautiously and gradually returned to her ordinary mode of life. She has recovered in a considerable degree her strength, but remains spare and thin.—*Monthly Journal of Med. Science, March* 1854, *p.* 252.

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## 70.—ON THE CHARACTERS OF URINE DEPOSITING OXALATE OF LIME.

By Dr. Douglas Maclagan, F.R..S.E, &c.

[After giving an elaborate table of thirty-four cases of this kind of urine, Dr. Maclagan observes:]

The principal characters which have been noticed as belonging to urine containing oxalates, are the following:—(1). A density somewhat higher than natural, indicating an excessive elimination of urea, or of the indeterminate extractive matters of the urine. In the series of cases recorded by Dr. Golding Bird, one-half of the specimens ranged from 1015 to 1025. Some were as low as 1009; some as high as 1030. In the cases recorded by Dr. J. W. Begbie (Monthly Journal, March 1848), the average density was 1028; the extremes being from below 1015 to above 1030, and in one case 1040. Dr. Prout states, in general terms, that the urine in such cases is of moderate density. (2). A colour, according to Dr. Prout, pale citron yellow, or greenish; according to Golding Bird, amber, never greenish; according to Dr. Begbie, amber, darker than in health. (3). An odour generally natural, rarely aromatic, like mignonette (Golding Bird); on the other hand, aromatic, occasionally approaching to that of the sweet-briar, noticed in urine containing the cystic oxide (J. W. Begbie). (4). A reaction almost always more or less acid, frequently powerfully so.

Very contradictory opinions have been expressed regarding the pathological importance of the oxalate of lime in the urine. On one hand, we are told of the "miseries which flow from the oxalic

diathesis,"—that from it sometimes "the bodily suffering is considerable, and the mental excitement verges on insanity,"—that "it is so generally important in its pathological bearings that it merits special attention." On the other hand, it is as confidently affirmed, that "oxalate of lime scarcely indicates a more serious derangement of the bodily health than a deposit of urate of ammonia does,"—and that to "set up such a diathesis as the oxalic is unreasonable, and contrary to the spirit of rational medicine." As usual in cases of such discrepancy of opinion, the truth will probably be found to lie between the two extremes. It does appear to me that, pathologically speaking, too much has been made of the expression, oxalic diathesis. Invested as the subject is with all the interest of a zoo-chemical question, its designation of oxalic diathesis, leads, I suspect, though it does not directly express it, too much to fix attention upon the mere idea of an inveterate tendency on the part of the elements of the food, or the elements of the tissues, to undergo a certain abmormal chemical metamorphosis, and excludes too much from view what is the really important question,—can we attain to any knowledge of the cause why such an abnormal chemical change should occur at all? The objection to the phrase oxalic diathesis appears to me to be, not that it involves an erroneous pathological theory, but that it is no theory at all. It is the mere expression of the fact, that, in a certain class of cases, oxalate of lime does occur in the urine in large quantity, and often for a considerable length of time: it gives no enlightenment as to the reasons why this should be the fact. The same is true of the expressions lithic and phosphatic diathesis. When we have got the length of designating certain cases by these names, and when we have by the usual process of chemical formulation shown *how* oxalic, uric, and phosphoric acid compounds can be formed in the body, we have not, I apprehend, made out their pathology. We have only cleared the ground so far as to reach the point of inquiry,—*Why* in three cases where the nutritive function is perverted, shall a series of actions be set up which shall lead in A, to the deposit of oxalate of lime; in B, of uric acid; and in C, of phosphatic salts from the urine? It is only when these questions are settled that we shall be able to say that we know what is really meant by the expressions oxalic, uric, or phosphatic diathesis.

I have been much struck in the perusal of the standard works and memoirs on this subject with the circumstance, that while it is generally stated that the exciting causes of the disease are easily traced, comparatively little attempt has been made to impress the reader with the importance of paying attention to these exciting causes; and yet I believe that an attention to them is of more importance than anything else, as a guide both towards proper discrimination and successful treatment of such cases. If there be anything more established than another regarding well-marked oxalic urine it is this, that it always is accompanied by a train of symp-

toms which point very decidedly to something wrong in the nervous system. Langour, inaptitude for the performance of duty or enjoyment of recreation, fretfulness, and hypochondriasis, are among the phenomena which are presented. Now, it seems to me to be an essential point to come to some understanding, as to whether these precede or follow the formation of oxalic acid in the system, whether the are, in whole or in part, its effects or its cause? It is, perhaps, not easy to determine this. Patients often do not come under medical treatment until both these phenomena are in full activity, and the history of the case does not always enable us to form any plausible opinion on this point. But it will, I think, generally be found, that when good information is afforded us as to the previous history of the patient, his ailments can be traced to something which would tend to impair the energy of his nervous system, or something which entailed upon it too great tear and wear; and which in either case prevented it from duly performing its duty of regulating and controlling the organic functions. For example, the exhaustion of the system by recent acute disease, as pointed out by Dr. Walshe, or long-continued chronic disease of some other kind, especially if involving the organs of digestion; or direct injury or organic disease of the nervous centres may be the cause in one set of cases,—whilst, in another set, either too sedulous an application to business, or mental distress and anxiety, or, perhaps, even the want of some healthy mental stimulus, may be the origin of this state of the nervous system. If this should prove to be true, then certainly there is no necessity for the assumption of a special diathesis, and that which we designate the oxalic diathesis would resolve itself into this,—a state of the nervous system, under which the organic functions become unduly performed, and in which, among other morbid phenomena, physical and psychical, gradually becoming aggravated as the case proceeds, some of the elements of nutrition are mal-assimilated, and along with the effete matters of the tissues, pass out of the system in the form of oxalic acid, instead of being carried off in some more normal state of combination. This is essentially the doctrine of Lehmann, who, though undoubtedly speaking rather with the authority of a chemist than of a physician, appears to have taken the right view of the cause of the occurrence of the oxalate, in ascribing it to a want of proper agency in the nervous system. It has always appeared to me a more feasible doctrine, than to regard the oxalate as a poison in the blood generated by an unexplained diathesis, and producing all those morbid phenomena in the nervous system. But to admit this is quite a different thing from going so far as to maintain with him and some English authors, that there is no essential connection between the oxalates and the symptoms which accompany them; and that the formation of oxalate is of little pathological importance. But it is needless to argue this question, as it appears to have been satisfactorily answered by Dr. Golding Bird.

I apprehend that if functional inefficiency in the nervous system be in any way recognised as a cause of the formation of the oxalates, it must be by its exerting an injurious effect on the respiratory function. By this is to be understood not any interference with the free ingress of air to the lungs, although this when it occurs, appears occasionally to lead to the formation of oxalates, as in chronic bronchitis, and pulmonary emphysema, but a disorder of the great respiratory function throughout the system, the oxygenation of the calorific elements of food and of effete matter of tissues. Now, the hypothesis which appears best to meet the case is, that from deficient innervation, the vital force and self-preservative power of the tissues is impaired; their waste goes on at an unnatural rate, and, perhaps, in an irregular manner; and that hence arise the increase of urea and extractive in the urine, and the emaciation and debility which characterise the disease when fully developed. But, as under these circumstances, the oxygen of the blood is used up in wasting the tissues, there is not enough of it adequately to consume the calorific elements of the food, and hence some of the carbon, especially that which is taken in the form of such respiratory elements as sugar, &c., which ought to have passed off into carbonic acid, is only oxidised so far as to form oxalic acid. It is not unworthy of recollection in relation to this view, that the over indulgence in sugar is one of the commonest causes of keeping up, and its avoidance one of the most important means of dimishing, the excretion of oxalic acid by the kidneys. Nor does this view infer the revival of the idea that there is any relation between oxaluria and diabetes, and that the one tends to pass into the other. There does not seem to be the least evidence of this. The greater part of the oxalic acid, therefore, is probably furnished by the mal-assimilated unazotized elements of the food, but there seems no reason to doubt that mal-assimilated nitrogenous matters likewise contribute towards its formation, because oxalates continue to be deposited in quantity from the urine when the use of unazotized food is very much restricted. In this case we may accept the doctrine of Bird, that the nitrogenized food is first converted into urea, or, as Liebig would have it, into uric acid, both of which are known, under decomposing agencies, readily to yield some oxalic acid along with other products.

I apprehend that the train of dyspeptic symptoms which occupy generally the most prominent place in the patient's complaints, are also to be ascribed to defective nervous agency. Dr. Prout long ago pointed out that the reducing function of the stomach is impaired in cases of this kind, and this may, I think, be interpreted as meaning that the muscular power of that organ is defective. The stomach symptoms, complained of by patients with oxalic urine, point more to this than to a vitiated state of the gastric secretions. Heartburn, the raw feeling of acid in the throat, pyrosis and fœtid breath, according to my observations, present themselves less frequently;

whilst flatulence, a sense of weight after meals, often referred to the pyloric region, and lasting for two or three hours after an ordinary meal, are more commonly experienced. In short, the phenomena are rather those of sluggish and imperfect than of vitiated *concoctio ciborum*, although when the mechanical action of the stomach is imperfect, it is likely that its chemical action will be also to some extent impaired; and I suspect that many cases which have been described by less recent writers as examples of retarded digestion, would by proper examination have been shown to be examples of oxalic urine. In a great many instances, the symptoms are only those referrible to the stomach, the illness not having advanced so far as to present the emaciation, hypochondriasis, &c., which characterise fully developed cases. There seems a disposition on the part of some medical men to draw a distinction between these two sets of patients, and I have heard them contrasted as being respectively cases of dyspepsia with oxalates in the urine, and cases of the oxalic diathesis. There does not seem to be any foundation for such distinctions; they differ from each other only in degree or progress; the stomach symptoms generally occur first, and if they are made the subject of timeous treatment, and if the exciting cause, be it what it may, is removed, they generally go no further; but if not attended to, or if made the subject merely of medicinal treatment, without due attention being given to the cause which has impaired the nervous energy, then the emaciation, weakness, and constitutional nervous symptoms follow. I certainly have not been able to make out by my observation, any such distinctions among cases of oxalic urine, as would entitle me to place them upon any grounds, in distinct categories, although this has, in relation to the amount of urea, been sanctioned by the authority of Dr. Golding Bird. I have never been able to make out any difference except in degree of development of the symptoms.

Little need be said as to the general result of cases of oxalic urine. Except when connected with or dependent upon organic or other intractable disease, it is in general not difficult of cure. I believe the most essential part of the treatment, as regards a final cure, to be hygienic, and that our most strenuous efforts ought to be directed towards detecting the causes which may have given rise to the patient's ailments, and insisting upon their removal. If these be unattended to, or if they be beyond our control, the treatment by medicine will be little better than palliative, and a recurrence of the complaints may be anticipated. Hence the recognised importance in all cases of protracted dyspepsia of ascertaining as accurately as possible the whole facts of the patient's habits and occupations. (The examination of the urine, though never to be neglected, is, perhaps, even of less importance). It is unnecessary to cite in illustration of this the necessity for getting rid of such causes of functional disorder as intemperance, incontinence, eating at irregular or

unsuitable hours, making undue exertion immediately after meals, over-excitement by business or pleasure, &c. Where there co-exists some separate disease, it must be sought to be removed by its own appropriate remedies. The ground being cleared in this way, the treatment of the case is in general simple enough. It may be comprised under the heads of stomachic remedies, mineral acids, and regulation of the diet. When the complaint has not proceeded farther than to constitute a mere case of dyspepsia, the ordinary stomachics will in general suffice. Rhubarb and dried carbonate of soda, with the addition of calumba when the appetite is bad, appears to be generally useful. Bismuth may be advantageously conjoined, where there is gastrodynia occurring generally when the stomach is empty. When the gastrodynia does not occur with an empty stomach, but comes on immediately or soon after taking food, and especially if it be conjoined with epigastric tenderness and tendency to vomit, much benefit is generally found to accrue from the use of a mixture containing in each dose two or three minims of hydrocyanic acid, ten or twelve minims of aqua potassæ, and a drachm of tincture of calumba, and if the gastritic tendency is very marked, which is, however, seldom the case, a sinapism may be applied to the epigastrium, at intervals of two or three days, according as the skin will bear it.

Laxative medicines in general are not much called for, and should be used sparingly. For mere torpidity of the bowels enemata of simple warm water will suffice. Where there seems reason to believe that the liver is congested, or not secreting properly, equal parts of the compound rhubarb and blue pill, in doses of five or ten grains, answers well. I generally have considered the occurrence of purpurine in the urine to be a good indication of such a laxative. (Dr. Golding Bird's valuable observations on purpurine do not appear to me to have met with the attention which they deserve. I refer to his work for the characters of this deposit). A very useful laxative, and at the same time an excellent stomachic, when the digestion appears to be very slow, is a pill containing one or two grains of Barbadoes aloes and half a grain of the alcoholic extract of nux vomica.

The employment of the mineral acids, chiefly nitro muriatic acid, has received the general approval of those who have written on this subject. It is not required, nor is it beneficial in the merely dyspeptic cases, but is of great value in the more advanced forms of the complaint. The chief indications for the use of the acid are, general weakness, nervousness, and loss of flesh, with a clammy state of the skin, more especially when the urine is of high density. It is apt to produce uneasiness in the epigastrium and dry cough, when the stomach is irritable, and, under these circumstances, may be intermitted, or replaced by hydrocyanic acid. Occasional diarrhœa does not contra-indicate the use of the nitro muriatic acid; on the

contrary, I have seen it much ameliorated by, or at least during, its use. When the appetite is feeble, and dyspepsia much complained of, it is best given with some bitter. Infusion of serpentaria, is generally not disliked by patients, and answers well in all cases of dyspepsia, whether with oxalic urine or not, where there is a tendency to nervousness. Where the appetite is very bad, the patient is nervous and depressed, and at the same time sleeps ill, I have thought that advantage was abtained from making the bitter infusion with some such proportions as, ℥iij. serpentaria, ℥ij. of gentian, and ℥ij. of hop to a pint of boiling water. In considering the *modus operandi* of the nitro muriatic acid, it is naturally suggested to the mind that both nitric and muriatic acids are solvents of oxalate of lime; but a very short reflection will show that its value does not depend upon any such chemical power; first, because there is no proof that any such acid can in a free state reach the kidneys where the oxalate is eliminated; secondly, that it appears to be pretty nearly established that the oxalate is in a state of solution when excreted, and therefore requires no solvent; and thirdly, if its action were of this chemical nature, there would be no reason for the preference given by universal consent to nitro muriatic acid, as either of its constituents is of itself a perfectly good solvent of the oxalate. The true action of the acid I conceive to be that of moderating the waste of the tissues, and so saving the patient's strength. It acts, I presume, by virtue of that power over the capillary system, whatever it may be, which enables the mineral acids to act as refrigerants, and to check sweating. I have generally used the nitro muriatic acid, but I confess more in compliance with the authority of others, than from any settled conviction that it is superior to simple nitric acid.

In relation both to the dyspeptic and general symptoms, however, the regulation of the diet is of more consequence than the administration of medicine, and is exceeded in importance only by the removal of any habit or mode of life which may be regarded as the originating cause of the disorder. In fact, errors in diet are in themselves frequently the sole cause which we require to remove. The established rule for dyspeptic patients is, "well-cooked, digestible food," but to be successful in the dietetical management of such cases, we require to be a little more precise. The statement of Dr. Prout in favour of "the French cookery, by which animal and other matters are reduced to a semi-fluid or pultaceous mass," has not I believe been sufficiently appreciated by medical men, and certainly has not in this country obtained much influence with the laity. The doctrine promulgated by certain pseudo-philosophers that modern cookery is a system of pleasing the palate at the expense of the stomach, has a strong hold on the public mind. Dyspeptic patients often complain very dolorously that their stomach will not do its duty, although they have, for its special relief, carefully refrained from all *entrèes*, and confined themselves to plain steak and chop, roast

and boiled; and it requires some argument to pursuade them that we are in earnest when we tell them actually to reverse their proceedings, and to betake themselves to those very articles which they reject as "dressed dishes." In estimating the dietetical qualities of different kinds of food, too much consideration is given to the kind of meat which may be used, and too little attention is paid to the mechanical condition in which it is served. This may in great measure be left to choice, provided the form of preparation be appropriate. In order to point out the appropriate form, it is not necessary that the physician should be an adept in cookery. Unless his patient be very unintelligent, it will commonly be enough to lay down the general rule that whatever approaches nearest to the soft solid consistence will answer best. Minced meats of different kinds, which may be varied in many forms, from the homely "minced collops" of Scotland to the more recondite performances which constitute the side dishes at every dinner party, sweetbreads, white fish, &c., make up a diet-table in which there is ample room for selection, and by which the interest of the stomach and the pleasing of the palate may easily be reconciled. It has often been urged upon me in reply to such recommendations, that they require for their accomplishment a better cook, and infer a more expensive style of housekeeping, than the patient's establishment affords. This, I am very sure, is a complete mistake, for I know that, when duly insisted on, all that is requisite can be obtained in families of the most moderate means and humble pretensions. Lehmann, in commenting on the much more frequent observation of oxalate of lime in the urine, in England than on the continent, ascribes it to the larger average density of the urine in England than in Germany or France, the oxalate being more rapidly deposited from a concentrated than an aqueous urine, and this higher density he accounts for chiefly by the assumed fact that much more animal food is eaten in England than in the other countries. "From statistical data it appears that any given number of Londoners eat six times as much animal food as an equal number of Parisians." But it appears to me that a better explanation can be found than in the mere proportions of animal and vegetable food consumed. Vegetable substances are not a whit less likely to furnish oxalic acid, where the dyspepsia exists, than animal food. On the contrary, many vegetables, such as sorrel, much used in France, it is well known, absolutely send oxalate of lime into the urine without giving rise to any ailment, because they contain the oxalic acid ready formed. The reason why oxalic urine has been more observed in this country is, that the dyspepsia which causes it to be looked for is more frequent, and I believe that this is rather to be ascribed to the national addiction to solid masses of meat than to any sixfold carnivorous propensity. The nearer we approach to French cookery the less I believe shall we encounter this form of urinary deposit.—*Monthly Journal of Medical Science, Dec.* 1853, *p.* 473.

## 71.—ON THE TREATMENT OF OXALURIA.

By Dr. James Gray, Glasgow.

[The terms oxaluria and oxalic acid diathesis are now well understood to mean that morbid state of the digestive and assimilative functions in which oxalic acid is eliminated by the kidney in combination with urine. It is by no means an uncommon complaint. The prevailing forms of the crystals are the octohedral and the dumb-bell. It is at present believed that the former consists of the *oxalate*, and the latter of the *oxalurate*, of lime; and this is likely, because therapeutic agents do not act alike in both cases. Dr. Gray, in this paper, endeavours to show the value of the nitrate of silver in cases where the dumb-bell form is present.]

*Case* 1.—James Fleck, aged 48, of a melancholic temperament, married, by trade a cooper; came under my care on the 3rd of Aug. 1851, complaining of intense pain in the epigastric region, so severe as to render him wholly unfit for his work. He attributes the first of his present illness to a debauch about three years ago, up to which time his general health had been good.

When I saw him he had a very haggard and emaciated appearance; skin of a greenish-yellow colour, tongue red, pulse regular, but weak. Complains of excruciating pain in the region of the stomach, both before and after taking food. This pain comes on in paroxysms, and is frequently attended with vomiting; the matter vomited has a dark grumous appearance, During the paroxysm the skin is cold and bedewed with moisture. Bowels confined, fæces of a dark colour; has occasional pains over the renal region. *To take a mild aperient, and a wine glassful of calumba infusion thrice daily.*

5th. No change for the better, pain still as severe. Is greatly depressed, and under the impression that he is consumptive and dying. This morning's urine has a dark amber colour, acid, specific gravity 1030, contains a large excess of urea; under the microscope, numerous octohedral crystals of the oxalate of lime, mixed with epithelial scales in great numbers, are visible. *To have a nutritious diet, to abstain from spirituous liquors, to sponge the body every morning with tepid water, and to take a teaspoonful of the following mixture every six hours;—Tincture of calumba, ℥ij; nitric acid and muriatic acid ăă ℥ss.*

8th. Greatly improved in appearance. He is now quite free from pain, is in better spirits, and takes his food with greater relish.

He went to the country shortly after this, and returned to his work about the beginning of November perfectly well.

On the 15th of Feb. following, he returned to me with all his former symptoms aggravated; which he attributed to irregularity in diet and exposure to cold. On examining the urine it was found to contain the oxalate of lime in dumb-bell crystals.

He was ordered to take a mild aperient, and the acidulated tincture of calumba as before.

18th Feb. Bowels freely moved, no improvement, passed a very bad night. *Ten drops wine of colchicum every six hours, and ½ grain sulphate of zinc, night and morning.*

22nd. Much the same, is evidently weaker and more emaciated, can take no food, greatly depressed in spirits. *One grain nitrate of silver every six hours.*

24th. Felt greatly relieved after taking the first dose of the nitrate of silver, is now improved in appearance. The paroxysms are less frequent and not so severe. This morning's urine contains the oxalate of lime in octohedral and dumb-bell crystals. *Continue the nitrate of silver in ½ grain doses; a teaspoonful of the acidulated tincture of calumba night and morning,*

March 3rd. Decidedly improved. The dumb-bell crystals have disappeared from the urine. *Omit the nitrate of silver and continue the mixture.*

April 10th. No trace of the oxalate of lime in the urine. He feels quite well, and has again resumed his work.

On the 3rd of Dec. last I was called to see him. I found him in bed, perfectly prostrated, with a small thready pulse, weak tremulous voice, skin cold and clammy, features contracted, countenance expressive of intense pain, low moaning, tossing of the arms, breathing slow, tongue white and coated. I learned that while at work this morning the pain had returned, and that he was induced by a fellow-workman to take two glasses of whisky, which increased the pain and brought on vomiting. *Sinapism to the epigastric region, warm drinks, and bottles of hot water round the body.*

The urine, on examination, was found to contain myriads of dumb-bell shaped crystals of the oxalate of lime, mixed with uric acid. *Nitrate of silver in grain doses every four hours.*

4th. Pulse fuller, no decided improvement in the other symptoms.

7th. Has improved greatly. The pain has now all but left him. *Continue the nitrate of silver in ½ grain doses three times a-day.*

On the 14th he went to the country, and returned to his work on the 27th. Up to this time he continues well.

*Case* 2.—On the 29th of April, 1852, I was consulted by J. R., aged 23, of a nervous temperament. He has been ailing more or less for the last nine months. Complains of pain and difficulty in swallowing, harassing cough, with roughness at the upper part of the larynx. When the cough is severe, the expectoration is tinged with blood: no appetite, bowels constipated, great weakness and emaciation, tonsils enlarged, and fauces considerably inflamed, tongue slightly coated. Percussion elicits a normal sound over the whole chest.

A strong solution of the nitrate of silver was applied to the upper part of the larynx and fauces, and he was ordered a mild laxative.

30th. The urine contains an excess of urea, and oxalate of lime in

octohedral crystals. *A teaspoonful of the acidulated tincture of calumba three times a-day,*

He went to the country shortly after this, and returned about the beginning of June, so much improved as to be able to resume his duties. No trace of the oxalate could be detected after his return, and with the exception of a few days' confinement to his room from an attack of "*cynanche tonsillaris,*" he has since then enjoyed good health.

*Case* 3.—J. M'Intosh, aged 25, ship cooper, came under my care on the 2nd Jan. 1852. From his history it appears that when at Georgetown, Demerara, he was very irregular and intemperate in his habits, that on the voyage home he was attacked with sickness, vomiting, headache, and loss of appetite, by which he was greatly reduced in strength, and confined to his berth for the greater part of the voyage, and since his return on the 18th of Nov. 1851, he has been confined to bed.

Complains of great feebleness, and of daily becoming weaker. The countenance is wan, and expressive of great anxiety. Tongue coated posteriorly, red at the point and edges; has no desire for food, and what he does take is often rejected, bowels loose, severe spasmodic cough, respiratory murmur healthy; profuse perspiration, particularly at night, and after awakening from sleep; pulse 120, weak and small, heart's action normal, urine of a dark amber colour, density 1035, contains oxalate of lime in octohedral crystals, with a large quantity of the urate of ammonia. *A mild nutritious diet, tepid sponging night and morning, a tea spoonful of the acidulated tincture of calumba every four hours.*

Under this course of treatment he continued to improve daily. About the 1st of Feb. he went for a few weeks to the country; on his return no trace of the oxalate of lime could be detected. Since then he has enjoyed good health.

*Case* 4.—John Anderson, aged 34, nervous temperament, by trade a cabinet-maker, consulted me on the 6th of July, 1852, for what he conceived to be an affection of the stomach. He informed me that about the middle of April preceding he began to lose his appetite, had slight pain in, and distension of the stomach, frequently accompanied by heartburn, palpitation of the heart, and pain in the loins. When he called on me in July these symptoms were considerably aggravated; his pulse was 84, strong and full, the slightest excitement caused palpitation of the heart, and severe headache. He has no appetite for food, which when taken causes pain in the stomach, flatulence, and sometimes vomiting. Bowels confined, urine of a pale yellow colour, specific gravity 1042, contains oxalate of lime in octohedral and dumbbell shaped crystals; a small quantity of urate of ammonia and epithelial scales. *Acidulated tinct. of calumba every four hours, a grain of nitrate of silver night and morning, tepid bath, and to abstain from vegetable food.*

He continued this course of treatment for five weeks, when the oxalate of lime entirely disappeared from the urine, the specific gravity fell to 1020, and he felt quite well. Since then I have not seen him.

*Case* 5.—On the 13th Jan. 1853, I was consulted in the case of J. M., aged 43, melancholic temperament. From his history it appears that in Jan. 1852, he had an attack of jaundice, accompanied by vomiting and pain in the stomach. The jaundiced appearance disappeared about the beginning of April, the vomiting and pain in the stomach, however, continued, but in a modified degree; towards the end of April a small tumour made its appearance in the epigastric region. Up to this date he has been gradually getting weaker and more emaciated, and for several weeks back he has been unable to leave his bed.

When I first saw him his complexion was of a dark yellow hue, and emaciation very great. He complains of intense pain in the stomach, which comes on in paroxysms, and generally causes sickness and vomiting, after which he experiences partial relief; the matter ejected has a dark coffee colour. Tongue coated posteriorly, and red at the point; bowels confined; pulse 106, small and weak, breathing slow but regular; has occasionally a pain in the loins, and along the anterior and inner side of the thighs and legs. On examination I found a tumour extending from the scrobiculus cordis downwards, to the extent of five inches, and on either side of the linea alba three inches. For several nights back he has been very restless, and unable to procure sleep. This morning's urine has a dark brown colour, specific gravity 1038, it contains mucus, epithelial scales, urate of ammonia, and oxalate of lime in dumb-bell crystals. *Nitrate of silver in* $\frac{1}{2}$ *grain doses every six hours, friction to the skin, and light nutritious food.*

19th. Can now retain his food, looks more cheerful, the abdominal tumour is considerably reduced in size, the urine is not so high in colour or density, still contains oxalate of lime.

27th. The abdominal tumour has entirely disappeared, which seems to have depended upon spasmodic contraction of the upper division of the rectus abdominis, feels stronger, and is able to take his food with relish.

Feb. 14th. The oxalate of lime has entirely disappeared, he is now able to take a little exercise. *Continue the nitrate of silver, night and morning.*

On the 22nd he went to the country, where he still remains. When I last heard from him (on May 4th), his general health had greatly improved, and he felt nearly as strong as before his first illness.

*Remarks.*—1. From the history of these cases it will be observed that the most prominent symptoms were the epigastric pain, vomiting, and emaciation; indeed the emaciation in the first and last cases was so great as to resemble the emaciation in the last stage of schir-

rhous pylorus. In all, but particularly in the first and last cases, the symptoms and appearances of poisoning by oxalic acid were well marked, which led me to examine the egesta for this poison, but I could detect none. In such cases as the preceding, guided solely by the symptoms, we should most certainly form an erroneous diagnosis; and here the value of microscopic, as well as chemical analysis of the urine, becomes apparent. The symptoms should not, however, in any case be undervalued; but when we can with certainty, and by a simple process, discover the cause which produces certain symptoms, we can with more confidence select the proper therapeutic agent. We, moreover, observe from these, that in all cases where the oxalate of lime is in octohedral crystals, the nitro-muriatic acid, combined with a vegetable tonic, will in most, if not in all cases, effect a cure.

2. That in those cases where the crystals assume the dumb-bell form. nitrate of silver appears to be particularly serviceable.

3. That when both kinds of crystals are present, these medicines should be given alternately.

The internal use of nitrate of silver has been generally objected to, from the effect it produces on the skin. I have frequently given in repeated doses of one grain, as much as 60 grains, without producing any discoloration.—*Glasgow Med. Journal, Oct.* 1853, *p.* 311.

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## 2.—ON MORBID CONDITIONS OF THE URINE CONNECTED WITH CHRONIC DISEASE.—INDIGESTION.

By Dr. H. Bence Jones, F.R.S., &c.

[Some time ago Dr. Bence Jones pointed out that frequently in a healthy person, when much acid exists in the stomach, the urine becomes alkaline. It becomes thick when boiled, but clears with nitric acid. This alkaline state of the urine is often caused by an irritable stomach, that is, *indigestion*, owing to insufficient air and exercise. It is not permanent, but varies in the same day, and exists only or chiefly when the stomach contains acid.]

The indications for treatment of *alkalescence from fixed alkali* are:—

1st. To remove the cause; that is, to lessen the irritability of the stomach.

2ndly. To correct the state of the urine.

In the slight form of the disorder which probably is frequently to be met with in many of us, little or no medical treatment is requisite. Less work, more air and exercise, mild, unirritating, nutritious food, will remove the alkalescence, which for the most part can be found by emptying the bladder directly after breakfast, and again in two hours.

In severer cases, acids and tonics are indicated.

Of acids, the vegetable acids are most efficacious in correcting the state of the urine. They can be taken in larger quantities than the

mineral acids, the intensely acid taste of which prevents a great increase in the dose.

The most frequent method of giving vegetable acid is in lemon juice, which has no definite composition. The specific gravity of one specimen I found was 1038·4; another, 1036·0; a third, 1037·9. Supposing that half an ounce saturates a scruple of carbonate of potash, then seventeen grains of dry citric acid are equivalent to half an ounce of lemon-juice. Each lemon contains about an ounce of lemon-juice, so that a lemon is equivalent to about thirty-four grains of citric acid, and twelve ounces of lemon-juice would equal six drachms, two scruples, eight grains of citric acid, or 408 grains. Now, I have found by experiment that this quantity of lemon-juice, taken in two doses of six ounces each dose, repeated in three hours, did not cause any pain in the bowels, and it occasioned very little uneasiness to the stomach, which was empty when the first dose was taken. It very decidedly increased the acidity of the urine, and it distinctly precipitated uric acid when the urine stood for some hours. This may be considered as resembling the effect of about 408 grains of citric acid in twelve ounces of water. Tartaric acid was taken dissolved in distilled water, in two doses of fifty-four grains each, in an hour and a quarter, without any uneasiness, but it caused very considerable pain in one hour. The pain, which was markedly intermitting at short intervals, lasted nearly three hours. Then the bowels were inclined to act, but no action took place. This was the effect of 108 grains of tartaric acid. A second experiment, in which 162 grains were taken in an hour and three-quarters, caused the same symptoms. The acidity of the urine was considerably increased.

It is probable from these experiments, that—

1. The solution of tartaric acid was not absorbed from the stomach, but passed into the intestines, and would have passed, partly at least, through them. 2. That the stomach is less sensitive than the intestines. The pain was not felt in the stomach, but was very severe in the bowels. 3. Tartaric acid is more than twice as irritating as citric acid in lemon-juice. The quantity of potassa in lemon-juice is too small to produce any very decided neutralising effect, the total ash in an ounce of juice being less than a grain and three-quarters.

[But there is another kind of alkaline urine, viz., that from volatile alkali, the first being from fixed alkali.]

The *alkalescence from volatile alkali*, whether caused by injury of the spinal cord, or from any other cause, owes its origin generally, if not always, to inflammation of the mucous membrane of the urinary organs. This gives rise to altered mucus and pus. The mucus determines the decomposition of the urea, changing it into carbonate of ammonia, which neutralises the acidity of the urine, and finally precipitates the phosphate of lime, and forms phosphate of ammonia and magnesia, which afterwards crystallises out. The carbonate of am-

monia lastly acts on the mucus and pus globules, making them adhesive, and forming the so-called ropy mucus, or, as it often had better be called, ropy pus, which is seen by the microscope to consist of crystals of phosphate of ammonia and magnesia, and of granules of phosphate of lime as well as of adhering mucus or pus cells.

The causes of inflammation of the mucous membrane of the urinary organs are innumerable. I should weary you by relating cases of acute or chronic inflammation of the bladder or kidneys from foreign bodies irritating the membrane, from injuries, whether cutting or crushing, from pressure caused by stricture or prostatic disease, from idiopathic or specific inflammation, as the extension of gonorrhœa; the action of strongly stimulating medicines; from the secondary effects of many other diseases, as scarlet fever, Bright's disease, malignant diseases, scrofulous diseases.

The ultimate results of alkalescence from volatile alkali are the formation of a fusible calculus and an irritable bladder.

Instances of the former result appear in very many of the calculi in the Museum. The white deposit, scarcely in a single instance is succeeded by any other deposit; that is, the inflammation of the bladder, when once it is set up, does not yield to treatment as long as the cause of the inflammation (the foreign body in the bladder) remains.

From whatever cause inflammation of the bladder arises it must be treated in the acute stage, as you would treat acute bronchitis, remembering that the urine is to the inflamed bladder what the air is to the inflamed bronchial tubes. The acidity of the urine must be lessened in order to lessen its irritating property. In doing this the opposite extreme must be carefully avoided, because, the tendency is to alkalescence of the urine, and if this is produced a greater degree of irritation results.

Special remedies are generally to be used only when the inflammation becomes more chronic. Judging, however, from the treatment of acute gonorrhœa and acute conjunctivitis, it is possible that the early use of astringent remedies might be beneficial; but as yet I can give you no exact information on this treatment.

Some of the special remedies for chronic inflammation of the bladder are, buchu, pareira brava, turpentine, cubebs, copaibæ. The properties of the three last-mentioned substances are so well known that I shall not dwell on them here. But, regarding the use of the two first named remedies, I think there is some uncertainty. At least, I remember well the time when I was unable to determine the rules which might guide me in prescribing buchu, pareira, and uva ursi. The last medicine, you will remember, has been already mentioned in these lectures. It is an astringent. It acts like gallic and tannic acids, and therein is its use and distinction from the other two medicines. It has been said buchu does good when pus is present in the urine, and pareira brava is good when there is ropy mucus. From what I have said in

this lecture, you will immediately see that this rule says, buchu is good when the urine is acid; pareira when it is alkaline. Now, there is nothing in the composition of the active ingredients of the two medicines which would make this a good reason for the rule. The buchu contains a peculiar extractive and a volatile aromatic oil; this last brings it into the class with camphor, turpentine, cubebs, &c.; while pareira brava contains starch, nitre, and a peculiar tonic extractive matter. Now, from this it would result, that it is more a demulcent than a stimulant; and the reason for the rule may be contained in this,—that, for the most part, when the pus is ropy from alkalescence, there is more irritability of the bladder than when the urine is acid and the pus globules separate. And, in accordance with this, I find, that pareira brava is of more service than buchu when there is much irritation. When there is a languid, sluggish state, without much irritation, the buchu is then the most useful remedy. Shortly, then, the rule which I propose to you is this:—When you want a stimulant, give buchu; when you want a demulcent, give pareira brava; when you want an astringent, give uva ursi.

[It is scarcely necessary to add, that when the urine is foul from a retention of the residue in making water, the bladder should be emptied twice daily.]—*Med. Times and Gazette, April* 15, 1854, *p.* 368.

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## 73.—ON PASSIVE HEMORRHAGE FROM THE KIDNEYS.

By Dr. E. G. Crooke, Chorley, Yorkshire.

[It is not always easy, when we are quite certain that the urine contains blood, to be able to state definitely from what part of the urinary apparatus it proceeds. Dr. Crooke is of opinion that it often precedes that condition in which albumen is present in the urine, viz: "*chronic albuminous nephritis;*" and that it often insidiously follows "*acute desquamative nephritis,*" which is supposed to have yielded to treatment.]

*Symptoms.*—Passive renal hemorrhage offers to our notice two classes of symptoms—the general and the local. The general are those of anemia, the result of a continual draining away of that vital fluid, the blood; the local refer chiefly to the bladder. The general symptoms are, a pallid complexion, of a dirty-white or muddy colour; with dilated pupils; occasional headache and singing in the ears; the tongue is large, flabby, and furred, the edges thereof indented by the teeth; the bowels are open and loose; there is much flatulence and nausea, with irregular appetite; palpitation is frequent; the surface of the body is cool; the skin soft and relaxed, but dry; the pulse full, soft, and bounding, or small and soft, putting on the former condition upon change of posture; there is gradual but progressive emaciation, irritability, and gloominess of temper, with great disinclination to any exertion, bodily or mental. These symptoms vary in degree according to the longer or shorter duration of the disease.

2nd. The local symptoms are in some cases an aching pain in the loins, but this is, perhaps, rather an exception than the rule. They, the loins, are rather the seat of an uneasiness and feeling of weakness, which is increased upon pressure: the calls to micturate are frequent and urgent, attended with pain, sometimes referrible to the penis, sometimes to the inside of the thighs and to the perineum; the urine is not much, if at all, increased in quantity when compared with the amount of fluids imbibed.

*Pathological Indications of the Urine.*—The usual quantity of fluids being taken into the stomach, the average daily amount of urine excreted may be stated at about fifty ounces. The specific gravity ranges from 1015 to 1035, the latter being the standard of the urina sanguinis. A gradual reduction in the weight of the urine has been observed in those cases which have been attended with frequent relapses. The colour is that of pale golden sherry; the odour is sweet; when recently passed, it has barely any action on litmus paper. A distinct alkaline reaction upon reddened litmus has not, however, been observed. When poured into a test-tube, a very slight cloud may be seen floating near the bottom; if allowed to stand for an hour or so, a small opaline deposit, easily dispersible, will form. The recent urine is unaffected by heat, or $NO_5$ HO; but if allowed to stand after their action, a small flocculent precipitate sometimes forms; occasionally, however, no precipitate is visible to the naked eye. Of that portion which is allowed to stand, the supernatant liquid is unaffected by heat and $NO_5$ HO; the deposit, however, is dissolved by the latter, indicating the presence of phosphates; and when heat is applied to the mixed fluid, as in the recent urine, a precipitate may or may not be the result. Upon submitting a drop of the recent urine to the field of the microscope, blood-discs, turgid or collapsed, single and not aggregated, together with epithelial cells and occasional casts of the uriniferous tubes, are seen; no pus-globules have been detected. Such are the usual characteristics of the urine; but the action of concurrent causes, as exposure to cold and the imbibition of diuretic fluids, renders the urine acid for a time, when crystals of uric acid and of the lithates, together with blood-discs, are seen.

It will be observed that the symptoms, general and local, are those of that form of renal disease termed by Rayer "Chronic Nephritis," but that there is an important difference in the character of the urine. In treating of this "chronic nephritis," Dr. Christison states ('Lib. of Med.,' vol. iv. p. 270) "that the urine very seldom contains blood or albumen, unless other renal diseases concur." However, of that form of renal disease now under notice, blood-globules have been invariably contained in the urine, but could only be detected with certainty by the microscope. Liability to passive renal hemorrhage appears to be either constitutional or acquired. Persons constitutionally predisposed are those of lax fibre, fair complexion, with skin soft and supple, easily excited to action, but as readily depressed: persons of a tuberculous tendency, prone to

affections of the mucous membranes, as catarrh, bronchitis, diarrhœa, &c., whose arterial system is in that state which may be termed irritable. Such a constitution appears, as it were, acquired by two other classes, who are specially prone to this hematuria—viz., those who are in the habit of consuming large quantities of diluent fluids, as haymakers, reapers, engineers, stokers, bleachers, tenters, dressers, and spinners in cotton mills—persons who, after exciting great cutaneous action by severe manual labour, or by working in a high artificial temperature, check the same by exposure to a much cooler atmosphere after the cessation of their daily employment. The habitual dram drinker is most prone to the acute form of Bright's disease, or to that stage which probably supervenes upon this—viz., that in which the urine is of low specific gravity, and contains free albumen. May not the frequent use of spirits, from their direct action upon the kidneys, by over-stimulating the organs, produce this hematuria, which may ultimately pass on to "chronic albuminous nephritis"? It may be observed, that of several cases of "passive renal hemorrhage" which have occurred in the practice of the writer, not one could, as far as the patient's recollection served, be traced to any dropsical affection, proximate or remote.

The average age of the persons affected was above thirty-five years; they were chiefly of the male sex, probably on account of the greater exposure of males to the predisposing and exciting causes, which latter appeared, as far as they were traceable, to be exposure to cold damp air when in a state of perspiration, frequent use of diuretic spirituous liquors—in fact, any circumstance which, depressing the heat of the body, produced congestion of the viscera.

*Pathology of the Disease.*—The presence of blood in the urine affords ample proof of the existence of hemorrhage from some part of the genito-urinary passages, the state in which the blood-discs are found, the inadequacy of chemical re-agents to detect them, the occasional casts of uriniferous tubes, and the natural colour of the urine, indicate that the hemorrhage is renal, yet not of an active kind. But the comparative paucity of the globules discharged would lead to the conclusion that the kidneys are not suffering from any organic lesions, but from an unbalanced state of their circulation. This state of venous engorgement may probably exist for some time without any structural change in the glands themselves, but unless relieved, it is apparent that exudation will ultimately occur, and derange the whole action of these excernant organs. The actual progress of this hematuria into chronic albuminous nephritis has not been traced, the remedies used in the cases, of which this paper is a general history, having had the effect of checking, if not of curing the hemorrhage.

*Treatment.*—The therapeutical indications are three in number. First, to check the hemorrhage by relieving the congestion; secondly, to restore the general health; thirdly, to guard against relapse, and

this is an important point, as there is a great tendency thereto upon the application of any exciting cause. The first indication may be effected by rest, daily use of the warm bath, with friction to the bodily surface, local depletion, abstinence from diuretic drinks, bland farinaceous diet, and the use of astringent remedies. To relieve the gastro-hepatic derangement, a small quantity of blue-pill, with a sedative saline draught, will be found useful at intervals during the exhibition of astringent remedies, the best of which is gallic acid. It has been given in the following form:—Gallic acid, a drachm; dilute hydrochloric acid, two drachms; solution of hydrochlorate of morphia, (E. P.,) one drachm; distilled water, five ounces and a half, as a mixture; a tablespoonful to be taken every fourth hour. The therapeutical effects of gallic acid are well described by Dr. Golding Bird:—"Gallic acid acts as a direct astringent, reaching the renal capillaries, and finding its way into the urine, which becomes strongly charged with it, &c." To relieve the irritability of the bladder, five grains of soap-and-opium pill should be used every night as a suppository. These medicines should be continued until the hemorrhage ceases, and the vesical irritability which remains for some time after the cessation of the hemorrhage, is relieved by tincture of cantharides, in doses of from ten to twenty drops, combined with an anodyne. When the urine is free from blood-discs, the general hygienic rules for restoring tone to the system should be enforced; animal diet with a few glasses of sherry daily, may be allowed, and quinine with iron prescribed; As preventive measures, the warm bath with friction should be daily persisted in; flannel should be worn next the skin, and all exposure to exciting causes studiously avoided.—*Lancet, Jan.* 14, 1854, *p.* 40.

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## 74.—ON SO-CALLED CHYLOUS URINE.

By Dr. H. Bence Jones, F.R.S., &c.

[Dr. Bence Jones has previously illustrated the effect of some acute diseases upon the renal secretion, as being causes and consequences of congestion of the kidney. He says,]

In cholera, scarlet fever, delirium tremens, and injury of the spinal cord, the effect on the urine was produced by these diseases affecting in different ways the circulation of the blood in the kidney. To say that the congestion arises from an effort to throw out a poison by the kidneys, is not to me more satisfactory than it would be to assert that the inflamed eye or ear, after scarlet fever, is caused by scarlet fever poison passing off by these organs. I am more satisfied with the explanation, that a state of blood prone to congestion and inflammation (excess of fibrin and diminished blood-globules) exists, and that, whether the congestion begins here or there, is determined by the slightest causes; thus, even in injury of the spinal cord, in which any

poison is out of the question, the congestion may begin in the kidneys, the bladder, the bowels, the lungs, or the skin, and it may pass into violent inflammation of this or that organ; while, in few cases, no congestion of any organ may occur.

In chronic diseases, also, it appears to me certain that an altered condition of the capillaries of the kidney gives a better explanation of the phenomena observed in the urine than is obtained by the doctrine of the elimination of a hypothetical poison. The disease which gives rise to the phenomenon of so-called chylous urine, in its causes, effects, and treatment is, perhaps, the best example of the results of chronic congestion that can be brought before you; and, though it is but rarely met with, yet it will form, with the diseases which I have already brought before you, the best introduction to the causes and symptoms of Bright's disease.

Here is a specimen of the so-called chylous urine, given to me by a patient yesterday, who for twenty-five years has passed this milky fluid, containing even more albumen than is ordinarily met with in Bright's disease, and yet she has long ceased from trying to obtain medical relief. The close examination of such cases clearly proves that, except in the presence of the minutely divided fatty matter, which appears only when the chyle passes into the blood, there is no connexion between this disease and chyle, but that it depends on congestion of the kidney, which causes albumen, fibrin, and blood-globules to pass out in the urine, and reduces considerably the specific gravity of the secretion, by preventing the elimination of other substances. Hitherto I have not been able to make any microscopic examination of the kidney in this disease, nor am I able to refer you to any published account of the exact state of the kidney; still the remarkable variations of the disease, the medicines which make it better, and the causes which make it worse, point to a slight but decided change in the capillaries of the kidney (perhaps in the capillaries of the mammary processes), whereby, as in a filter, when the weight of fluid is too great, some substances are allowed to pass through which would be retained if the filter were stronger.

[Dr. Jones has seen four cases of this disease. In one case, all the peculiarities of the urine, during three years, will be found detailed in the 'Philosophical Transactions' for 1850, and in the 'Medico-Chirurgical Transactions' for the same year. Dr. Jones proceeds:]

My object now is to show you 1st that *Congestion takes place and causes albumen to pass off in the urine before any food has been eaten;* 2ndly, that *The effect of this congestion is also to diminish the specific gravity of the urine;* and 3rdly, to dwell on *The remedies for the disease.*

If you look at the following Table, you will find that the urine first passed each day is always the clearest, least like the specimen on the table. Very frequently, before getting up, no trace of albumen

could be found by any chemical test, nor by the most minute microscopical examination could the urine be distinguished from perfectly healthy secretion. By causing the patient to get up before he had taken anything to eat, the urine became highly albuminous, and sometimes fibrinous to such a degree that the liquid gelatinized on standing, while, by the microscope, blood globules could be detected in considerable quantity. At the same time, the specific gravity was reduced eight or even twelve degrees.

The amount of albumen was comparatively determined by precipitating the urine by alcohol. This does not give the albumen directly, because the sulphates are at the same time precipitated.

The following examples of the state of the urine before food will show the increase of the albumen and the decrease of the specific gravity:—

| Urine passed at | Precipitate with Alcohol. Per 1000 grs. urine. | Specific Gravity. |
|---|---|---|
| 7.15 a.m., on getting up, gave scarcely a trace of albumen . . . | 0·8 gr. | 1027· |
| 9.50 a.m., just before breakfast, opalescent; coagulated to solid | 14·1 „ | 1015·6 |
| 11 a.m., after breakfast, perfectly milky | 14·5 „ | 1013·4 |
| Another day— | | |
| 6 a.m., on getting up, urine clear; no trace of albumen . . | 1·6 „ | 1026·4 |
| 7.30 a.m., before breakfast, opalescent | 11·9 „ | 1018·8 |
| Another day— | | |
| 6·35 a.m., on getting up, yellow, milky | 3·6 „ | 1026·6 |
| 8·10 a.m., before breakfast, more milky, with large pinkish coagula | 16·58 „ | 1016·4 |

I frequently determined beforehand whether the urine before breakfast should be albuminous or free from albumen, by directing the patient to get up and move about early, or to keep very quiet in bed; and by keeping him in bed all the day, the urine throughout the whole day was very slightly albuminous.

The following *conclusions* are given in the 'Philosophical Transactions:—

1. That so-called chylous urine may contain fat, albumen, fibrin, and healthy blood globules.

2. That, although the fat passes off in the urine after food is taken, yet the albumen, fibrin, and blood globules are thrown out before any food has been taken. During perfect rest the albumen ceases to be excreted; and it does not appear in quantity in the urine even after food is taken, provided there is perfect rest. A short time after rising early, the urine may coagulate spontaneously, although no fat is present in perceptible quantity, and this may happen previous to any food.

3. Though the urine made just before and a short time after bleed-

ing was as milky as usual in the afternoon, yet the serum of the blood was not milky. It did not contain a larger quantity of fat than healthy blood does.

In another case, in which I have a record of the appearance of the urine each time it has been passed from the 13th of May to April 26, the urine has been clear without exception in the morning of every day. It has become more or less frequently thick at noon, and very thick in the afternoon and at bed-time. No trace of albumen has been present in the morning; while much albumen, and even blood-globules, have been preceptible in the water passed at other periods of the day.

In neither of these cases have I detected any fibrinous casts of the tubes; and hence I have conjectured, that the congestion affects the mammary processes of the kidney, rather than the cortical structure.

*Effect of remedies.*—In the 'Medico-Chirurgical Transactions' the following table of the effect of remedies in the first case is given in 1000 observations:

| | Chylous and Albuminous in different degrees. | Healthy. |
|---|---|---|
| 1. On animal food . . . . | 968 times. | 32 times. |
| 2. On vegetable food . . . | 910 „ | 90 „ |
| 3. Pressure by a loose belt . | 667 „ | 333 „ |
| 4. Pressure by tight belt . . | 638 „ | 362 „ |
| 5. While taking matico . . | 474 „ | 526 „ |
| 6. While taking gallic acid . | 17 „ | 983 „ |
| 7. After gallic acid . . . | 0 „ | 1000 „ |

The gallic acid was taken for twenty-four days in drachm doses, and decreased during the next twenty-nine days; it was diminished to fifteen grains, after which it was left off. The patient remained perfectly well for six months, with the exception of two days. The congestion then returned for a week, but again yielded to gallic acid; and for eight months the urine was perfectly healthy every time it was passed. A most intractable relapse then occurred, which lasted nearly five months. The gallic and tannic acids were taken; the first to the amount of twenty-five ounces in six months, the latter to the amount of two ounces. Two drachms of gallic acid in the day caused no unpleasant symptoms, while half a drachm of tannic acid caused nausea and headache. Ultimately, the albumen entirely disappeared. The urine remained healthy for six months, when the record ceased, in consequence of the patient's departure to the West Indies.

In the other case, which has for nearly a year been under my observation, a drachm of gallic acid was at first taken daily; this was soon increased to a drachm and a-half, and then two drachms daily, and after about two months three drachms of gallic acid were taken each day. The urine was occasionally for a day or two made healthy; no inconvenience was experienced from this dose; on changing it for a drachm of tannic acid daily, the patient was made "exceedingly

uncomfortable," "painfully sick at the stomach," and he could not continue taking more than half a drachm in the course of the day. The tannic acid also occasionally made the urine healthy for a day, but after about three weeks the gallic acid was resumed in three drachm doses on account of the nausea produced by the tannin. It was continued for a fortnight without improvement, when tannate of alumina was given, about a scruple dissolved in very dilute sulphuric acid,—about three drops of acid in an ounce and a half of water. Here is this mixture, in which, as you see, the tannate of alumina is by no means perfectly dissolved. It had, however, a very decided effect on the urine on the fourth day. On the eighth it was perfectly clear. Afterwards, by dissolving a drachm of tannic acid and a drachm of alum, in three ounces of distilled water, a very much clearer and equally efficacious mixture was obtained; this was diluted with water, and taken daily in decreasing doses for three months, with scarcely a return of the disease. Since the 18th of February, the medicine has been stopped, and the unhealthy urine has not re-appeared. In less than five months more than thirty-three ounces of gallic acid were taken.

From these cases it is evident that *gallic acid may be given in very large doses, for a considerable time, without any ill effect.* The appearance of the acid in the urine may readily be detected; how rapidly I have not determined, but probably in the course of a few minutes, judging from the rate at which other soluble substances can be found. Thus, in some late experiments, even one grain of iodide of potassium, dissolved in an ounce of water, taken on an empty stomach, I have found in twelve minutes, and very distinctly in fourteen minutes. When seven grains of the sulphate of protoxide of iron, in two ounces of water, were taken on an empty stomach, I found a portion in the urine in ten minutes, and very plainly in fifteen minutes.

Even in *hæmoptysis* you may give gallic acid in drachm doses with great benefit and without risk. I have never seen any bad symptoms from its use. Certainly the patient who passed the chylous urine now before you, said, that a single dose of ten grains of gallic acid caused giddiness of the head and uneasiness of the stomach, in consequence of which she would take no more; but I do not consider that this is to be weighed in opposition to the cases I have related.

I may remind you, that this medicine has been recommended in Bright's disease. In the hospital and in private I have tested it most carefully. I have never seen small doses stop the escape of the albumen into the urine, and in larger doses I have seen severe epilepsy follow its employment. Thus a painter, aged 39, had dropsy one month. The urine was highly albuminous; specific gravity 1013. As he did not improve by using vapour-baths and compound jalap-powder, gallic acid was given in ten-grain doses four times a day. The day but one following the quantity was increased to twenty grains thrice daily. He took only two doses, when he complained of severe

pain in the head, and in half an hour he had a violent epileptic fit, which left him perfectly insensible. In twenty-four hours he had nine similar fits; for two days he was comatose. He remained in the house four months after this, during which time he had no more epilepsy.

The chemical relation of gallic acid to tannic acid is seen in the formulæ:—

$$\left.\begin{array}{l} 1 \text{ eq. tan. acid} = C_{18}\ H_8\ O_{12} \\ 8 \text{ eq. oxygen} = \quad O_8 \\ \hline C_{18}\ H_8\ O_{20} \end{array}\right\} = \left\{\begin{array}{l} C_{14}\ H_6\ O_{10} = 2 \text{ eq. gal. acid} \\ H_2\ O_2 = 2 \text{ eq. water} \\ C_4\ O_8 = 4 \text{ eq. car. acid.} \\ \hline C_{18}\ H_8\ O_{20} \end{array}\right.$$

So that tannic acid, when oxidised, gives rise to gallic acid, carbonic acid, and water. This happens when tannic acid is taken as medicine, for then gallic may be found in the urine. The chemical composition does not at all account for the more astringent action of tannic acid on the stomach. Judging by the cases I have mentioned, I consider that tannic acid is at least three times as astringent as gallic acid; and, from the comparative solubilities of the substances, I think that generally, as well as locally, there is no superiority in gallic acid.

The combination of tannate of alumina, and the mixture of tannic acid with alum, used locally for *leucorrhœa*, I have found very efficacious; and the former substance, Mr. Morson tells me, is much used. From its insolubility in water, it is probably less active than the solution of tannic acid and alum.

Here is another astringent substance, for which I am indebted to Mr. Morson. These fine crystals are iron alum; that is, alum in which the potassa is replaced by oxide of iron. It is soluble in water, and, in doses of five to ten grains, highly tonic and astringent. In anemic patients with leucorrhœa, it is most useful.

I must conclude this lecture by a few remarks on two substances frequently used as astringents in urinary disorders,—uva ursi and matico.

The leaves of the uva ursi contain 36·4 per cent. of tannic acid, also gallic acid, and a bitter extractive matter. The tannic acid is by far the most important agent which is present. It is this which makes the infusion of uva ursi incompatible with metals and cinchona bark. Forty-five minutes after the infusion has been taken, the tannic acid has been detected in the urine. In *menorrhagia*, *cystorrhœa*, *diabetes*, and in other fluxes, the infusion has been found useful. It has been recommended in consumption. The dose of the leaves powdered is from ten grains to forty grains, in which there are from 3·6 grains to 145 grains of tannic acid. The decoction is made by boiling an ounce of leaves in twenty ounces of water, or forty-eight grains of the leaves to two ounces of water; that quantity of liquid should, therefore, contain about seventeen grains of tannic acid. For clear-

ness, then, the decoction of uva ursi may be considered as a solution of tannic acid, containing seventeen grains in two ounces of the liquid. Possibly the other constituents of the uva ursi leaves have some medicinal virtue, but I have no certain knowledge to give you on this point.

The astringent properties of matico have also been highly spoken of. As a remedy in *hematuria* I have found it useful. The dose of the powder is from 10 to 30 grains. An infusion of the leaves, in the proportion of an ounce to a pint of water, may be used. The matico, in its composition and mode of action, has nothing in common with the remedies I have mentioned in this lecture. It contains no trace of tannic or gallic acid. It belongs to the family of Piperaceæ. It more closely resembles cubebs than any other substance. Its astringent properties are due to a volatile oil, and hence its action may be classed with that of oil of turpentine; whether it possesses more astringent virtue than this last-mentioned remedy I have not been able as yet to determine.

The nature, then, of so-called chylous urine is placed beyond all doubt. The action in this disease of gallic acid, tannic acid, tannate of alumina, and tannic acid with alum, conjoined with the remarkable fact, that the urine becomes albuminous after exertion, before any food whatever has been taken, shows that congestion of the kidney is the cause of the symptoms. We have seen to day, that this congestion may last more or less constantly for a quarter of a century, and that the mere loss of albumen in the urine is not of such serious import as from Bright's disease you might be led to suppose. We have seen, that the congestion may be kept off by rest, or be much increased by exercise, and be even stopped by perseverance in the use of the most powerful astringents. Lastly, we have seen, that not only does albumen in the urine appear daily, but that the specific gravity of the urine may be reduced by the congestion far below the specific gravity where no congestion existed. It appears from this to be very probable that close examination may detect this disease more frequently than has hitherto been the case.—*Medical Times and Gazette, Nov.* 12, 1853, *p.* 493.

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## 75.—CONTRIBUTIONS TO THE EXAMINATION OF THE URINE.

By Professor J. Vogel.

The author's observations bear upon the amount of secretion, the specific gravity, and the colour of the urine. He regards the urine, not as a sign of local disease, but in its signification upon the general change of material in the body.

The quantity of the urine cannot be determined by weighing, but by measurement in standing glass vessels, which are graduated in cubic-centimetres,—1000 cubic-centimetres, of specific gravity 1030,

weigh 1030 grammes. Thus can be learned both the whole quantity excreted in the twenty-four hours and the difference of amount for shorter periods, governed by various influences.

Two sources of fallacy must be borne in mind. First, it is never quite clear at the commencement of the observation, whether or no the bladder be completely empty; and secondly, the loss of urine during the evacuation of the fæces can only be guessed. Considerable accuracy may, however, be obtained by a repetition of the experiments.

The quantity of urine voided by a healthy man in the twenty-four hours varies between 1000 and 3000 cubic-centimetres; the hourly secretion is from 20 to 200 cubic-centimetres. The causes of these variations are partly internal, partly external; some transitory, others of longer duration; some simple, others complicated. The influence of drink is the most remarkable. It may increase the secretion, within four hours, to three or even ten times the normal quantity. The influence of different diuretic medicines requires further investigation; as also the effects of other watery secretion in diminishing the flow of urine; likewise the influence of atmospheric changes. The medium quantity of urine in relation to the weight and length of the body is of varying amount. The quantity poured forth in the night is generally the least; while in the morning it increases, and in the afternoon or evening attains its maximum. There are, however, no conclusive observations upon this point in the case of women, children, and old men. People who are accustomed to void daily large quantities of urine, bear indifferently both hunger and thirst. Diseases which disturb the urinary secretion, are more dangerous in them than in other persons in whom the excretion takes another channel. But when the disease is characterised by excess of urinary secretion, recovery takes place more rapidly than in other persons of different habit.

As regards the quantity of urine secreted in disease, the author found it normal in many chronic feverless complaints, more especially in women. It exceeded the normal quantity but rarely; as in diabetes mellitus and insipidus. The quantity was diminished in the greater number of affections; mostly in acute fevers, at the end of chronic diseases, or in dropsy.

The specific gravity is of use to reduce quantity to weight; but it gives an uncertain representation of the amount of solid parts to the watery. Trapp, who endeavoured to correct Becquerel's tables, gives, as an approximation, the simple rule to subtract 1000 from the found specific gravity, and to double the remainder; the product gives the weight of solid parts contained in 1000 parts of urine. The following conclusions are deduced from the relation of the quantity of the urine to its specific gravity. As a rule, specific gravity and quantity stand in opposition to one another. When urine whose quantity is far below the standard shows a high specific gravity, it indicates abstinence from drink, or excessive watery excretion in other channels. A great secretion of urine, with low specific gravity, proves great absorption of fluid.

Low specific gravity, with diminished urinary secretion, points to disturbance in the secreting function, as in Bright's disease: an abundant secretion, with high specific gravity, leads to the supposition that sugar is excreted. The medium specific gravity of a healthy man is 1020; according to Becquerel, it is 1018·9. A man weighing 100 kilogrammes (200lb.) voids in the hour 103 grammes of urine; of which 4·1 grammes, or rather more than a drachm and a quarter, is the weight of solid parts. In most chronic diseases, the amount of solid parts is diminished; while in two classes the quantity of urine is excessively increased: in one, there is an addition to the number of solid constituents, namely, in diabetes mellitus and insipidus, attended with emaciation, &c.; in the other, namely, hydruria, there is diminution of the solid parts and loss of specific gravity. In the latter case, there is no emaciation, and the process favours the elimination of morbid products, as in many cases of dropsy. In acute fevers, the quantity of the urine is less, but the specific gravity increases in proportion as the amount diminishes. The urine, in such cases, contains, it is true, less solid matter than that from a perfectly healthy man, but not less than that voided by a person suffering from some chronic complaint. Such patients are in the position of one starving, the solid matter of the urine being obtained at the cost of the body. At the quick approach of death there has been noticed a continued increase of specific gravity with a continued decrease in the urinary secretion. When death ensues from injury to the medulla oblongata, the quantity of urine remains considerable to the last, but the specific gravity is small. A great amount of combinations of chlorine will be poured forth in the hydruria which removes hydræmia; and this agrees with the observation of Schmidt, that a deficiency of albumen in the blood may be supplied by the taking up of a certain quantity of chloride of sodium.

The author arranges the colour of the urine under three divisions, namely yellow, red, and brown; and he establishes the colour by comparing it with definite mixtures of gamboge; gamboge and carmine; gamboge, carmine, and Prussian blue. Each of these falls into three subdivisions, namely, pale yellow, bright yellow, yellow; reddish yellow, yellowish red, red; brownish red, reddish brown, brownish black. These hues can be accurately obtained by different dilutions of the above-mentioned colours. In health the colour of the urine varies mostly between reddish yellow and bright yellow; but every individual has some standard colour of his own. In diseases the colour varies greatly. Pale urine is voided in hysterical and nervous patients; in many cases of anemia; in convalescence. In all feverish attacks the urine is yellowish red or red, containing absolutely more colouring matter than in the normal state. In many cases of typhus, in Bright's disease, in scorbutic attacks, it becomes brown or brownish black, from admixture of blood-discs. The author succeeded, by boiling, in separating a coagulum of hæmato-globulin in these last cases, after which the urine was paler.—*Archiv. fur Wissenschaft. Heilk.—Med. Times and Gaz., Oct.* 15, 1853, *p.* 404.

# SURGERY.

## FRACTURES, AND DISEASES OF THE BONES AND JOINTS.

### 76.—ON UNUNITED FRACTURE OF THE FEMUR.

Under the care of E. Stanley, Esq., F.R.S., at St Bartholomew's Hospital.

[Several cases of ununited fracture, treated by Dieffenbach's Peg Operation, will be found in *Braithwaite's Retrospect*, Vol. xxvi., p. 150. The following important case, in which Mr. Stanley lately had recourse again to the same operation, slightly modified, is thus recorded in the 'Lancet':]

Edward W., aged 27 years, was admitted into Darker ward on the 13th of August, 1853. The patient has been mostly employed in the country, is married and of very temperate habits; both his father and his mother are alive, no kind of taint seems to pervade the family, and the man himself looks healthy and robust.

He states that thirteen months before admission a tree which was being felled rolled over his thigh, and broke it towards the upper third. He was conveyed to his house, and the limb, after having been set, was put up by a surgeon. The fracture seems to have been simple, and the apparatus used for keeping the fragments in apposition was, according to the patient's account, one long splint placed under the thigh, and two short ones on either side. This was left on without being disturbed, for six or eight weeks; the splints were then taken off, and the man thinks that after a little handling of the leg he heard something snapping at the seat of the fracture. As it appears that no consolidation was found, the same splints were put on again; but some swelling now took place from the knee downwards. The application of a roller somewhat controlled the œdema, and the apparatus was now left on for twelve weeks more, the patient remaining all the while in good health. He maintains that no blame can be attached to himself as to the non-union of the fragments, as he lay very quiet for the whole of the period above mentioned. It became, however, evident that the ends of the fragments did not evince the slightest disposition to consolidation, and after various ways of obtaining it were tried, the patient applied at this hospital.

It was found, on examination, that the fracture was situated a few inches below the trochanter major, on the left side, and that the ends of the fragments were riding upon one another. Mr. Stanley ordered

a gum-and-starch bandage to be carefully applied, hoping that the pressure of the apparatus would promote the throwing out of callus. This bandage was allowed to remain for several weeks, and on being taken off, it became evident that no union had occurred.

It was now thought that a system of direct pressure upon the spot where the ends of the fragments were in apposition might perhaps sufficiently excite the parts, and bring on inflammatory action, and a subsequent formation of callus. Mr. Stanley had, therefore, an apparatus constructed which allowed the patient to get up and walk about on crutches, while the fragments were kept in close apposition, and a certain amount of pressure exerted upon them. Small doses of mercury were given at that period, as this metal had in several recorded instances, had the effect of promoting the secretion of callus.

This system was persevered in for a number of weeks, but it did not conduce to the desired effects ; and Mr. Stanley now resolved to have recourse to Dieffenbach's plan, modified by the addition of a wire, intended to excite inflammation in the bone, besides securing the fragments in perfect apposition.

The operation took place on March 11th, 1854, whilst the patient was under the influence of chloroform. Mr. Stanley made a semi-lunar incision, about six inches in length, on the external part of the thigh, laying open the seat of the fracture. The ends of the fragments were easily brought into view, as the pressure which had been used in the attempts to obtain union had considerably thinned the soft parts over the ununited portions of bone. On examining the wound, a large piece of muscle was found lying between the ends of the fragments; this great obstacle to union having been removed, Mr. Stanley introduced pegs of ivory, about two inches long, into the extremities of the broken portions of bone, one peg in the upper, and two in the lower fragment. A hole was now bored towards the end of the latter, and a double iron wire covered with silver was passed through the whole thickness of the bone. The wire was drawn through the shaft to a pretty great length, and the two extremities brought down and introduced into a perforation made through the end of the upper fragment. These extremities were carefully drawn through this second hole, and when they had been pulled out to some length, the ends were twisted, and connected with the loop hanging out of the original osseous perforation in the lower fragment. The flap was then brought down, and one suture applied.

Mr. Stanley had the limb placed in a suitable apparatus, and the patient has progressed pretty well since the operation. The two principal features that have marked the course of the case are a slight attack of erysipelas and sudden hemorrhage. But it may be hoped that these untoward events will not interfere with the success of the operation, and we hope soon to give an account of the successful issue of the case.—*Lancet, April* 1, 1854, *p.* 361.

77.—*Galvanism in Ununited Fracture.*—A case occurred some months ago, at the York County Hospital, in which, under the care of Mr. Holl, the house surgeon, galvanism was employed for the production of union in an ununited fracture. Mr. Holl introduced a needle from each side of the limb into the interspace between the bones, and then passed a continuous galvanic current through. The operation was repeated every day for about a fortnight, and a cure ultimately resulted. The fracture was of the leg, very moveable, and had existed more than a year.—*Medical Times and Gazette, Nov.* 12, 1153, *p.* 501.

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78.—*On Extemporaneous Woven Wire Bandages, Splints, &c.*—[In a communication to the Medical Society of London, by James Startin, Esq., after speaking of the advantages which these apparatus afford, he says:] Each apparatus consists of woven and flattened copper, brass, or iron wire, of various thicknesses and strength, which may be plated with tin, or other metal, or lacquered. The cost of the woven and flattened wire is 8d. to 1s. 4d. the square foot, which, for splints or cages, can be cut with scissors into any desired form, and the edges covered with strips of thin lead, gutta percha, or sticking-plaster; or bindings of cotton, wash leather, &c., may be stitched on by needle and thread. The wire rollers require no binding, if in cutting them from the piece, care be taken to follow the wires of the woof closely with the scissors, so as to leave no projecting points. The flatting (i. e., passing the woven wire in the piece through the flatting mill-rollers) will prevent unravelling, both in the bandages and splints, whilst at the same time it gives the required uniformity of surface. The mode of applying either splints or cages is most facile. A piece of stout cartridge paper is to be employed to take the necessary pattern, which being accomplished with as few cuttings as possible, is to be laid upon the piece of woven and flattened wire, and a counterpart cut from it, the edges of which are to be protected in any of the manners before indicated. When this is done, simple folds of lint or linen, wet in warm water, are to be applied smoothly to environ the limb or joint affected, when the wire splint, cage, or roller is to be adapted accurately to it, and fixed with tape or bandage. It will be obvious that the material forming these rollers or splints, whilst it ensures the necessary quietude to the injured part, will allow without difficulty or removal, the ready escape of discharges, and the use of wet applications; the splints and cages will also admit of openings (trap doors they may be called) being cut into them, through which the wounds, &c. can be dressed, without disturbing the support afforded by the splint.—*Lancet, Feb.* 4, 1854, *p.* 138.

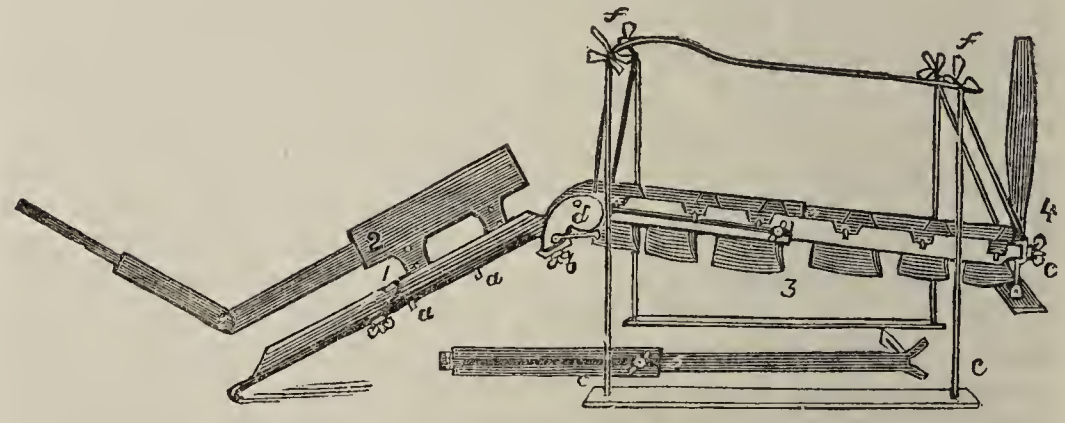
## 79.—DESCRIPTION OF A NEW SPLINT.

Invented by Charles John Gibb, Esq., House-Surgeon to the Newcastle Infirmary, &c.

[There can be no question of the value of a splint, simple in principle, and *capable of adaptation to all fractures of the extremities and to any size of patient.* Such a splint Mr. Gibb believes the one he has invented to be. He says]

I have invented a splint which, I believe, will be found, in general practice, capable of almost universal application in fractures of the limbs. The principle of the whole splint is that of the simple slide. Each part is made of pieces of sheet iron, which slide alongside of, or within each other, and can be fixed at any required length by a finger-screw. The various parts are designed in such a manner, as when fitted together in different ways, to form a splint of varying size, suitable to the limb of a child or a man, and in shape combine all the advantages of various sizes of the long straight, Liston's, McIntyre's, and Greenhow's double incline splints, for the lower extremity, or of small straight or angular splints, for the upper extremity.

*The complete splint, pulled out to its largest size.*




The splint consists, as will be seen, of a thigh-piece (1); lateral thigh and side-piece (2); two leg-pieces (3 3); a foot-piece (4); an additional side-piece (5); and a sling cradle. When required for use, the *thigh-piece* (1) can be shortened or lengthened to the size of the patient's limb, by relaxing the finger-screw seen at its under aspect, and pulling out or pushing in the one slide piece upon the other; and can be narrowed or made broader by shifting one or other of the holes seen in the lateral thigh and side-piece (2) on to the projecting male screws (*a a*) seen at the under surface of either side of the thigh-piece, and fixing it there by the corresponding female finger-screws. The *lateral thigh and side-piece* (2) as is evident, may be fixed on either side of the thigh-piece to suit a fracture of either limb; can be made of any required length, to extend to the short ribs of the patient for the purposes of counter-extension having two slits above for the ends of the

perineal band; and the one half may be placed at any angle with the other to suit the various bends of the body at the hip-joint, by alterations in the spring-catch, which locks the joint seen at its centre.

The required length for the leg can be secured by alterations effected in the position of the slides of the *leg-pieces* (3 3); by loosening the finger-screws near to the figures (3 3); and the breadth by similar alterations in the screws and slides at *b* and *c*. The joint (*d*), seen in the right-hand leg-piece of the knee, is to allow of the flexing and extending of the knee; and the spring-catch, seen a little below the letter (*d*), is used to fix the joint by placing the catch in the small hole in front of the letter (*d*), which there locks into corresponding holes in the other part of the leg-piece, entering into the composition of the joint.

The form and size of each piece of the splint have been most carefully determined by experimental observation, in order that the whole of the splint may be capable of being accurately adjusted, to suit the limbs of children or men, and the requirements of their varied fractures and dislocations.

As seen in the preceding woodcut, the splint resembles the fracture-bed of Mr. Greenhow, and is more especially adapted for the treatment of bad cases of compound or complicated fractures or dislocations of the leg, ankle, or thigh. Several of such cases have already been most successfully treated upon it.

The interval between the leg-pieces is filled up by strips of bandage or india-rubber sheeting, as seen in the cut; one or more can be removed to allow of the dressing of the wound of a compound fracture, without disturbing the position of the limb in the slightest. This is found an immense advantage over the ordinary splints in the treatment of cases where the wound is large or extends round the limb; for by no other contrivance is it possible to cleanse or dress the wound, without considerable disturbance of the bandages, splints, and even of the limb itself, with consequent rubbing together or displacement of the ends of the bones, and accompanying pain and ill-effects to the patient.

The limb lies most securely upon the splint, as upon all others, when the cushions or paddings are thin; and where there is a compound fracture of the leg, it is by far the best plan to support the wounded part of the limb simply on the strips of bandage, as the dressing can be effected daily, or oftener, if necessary, with the most perfect ease, by simply withdrawing the pieces of bandage and thus exposing the whole circumference of the limb.

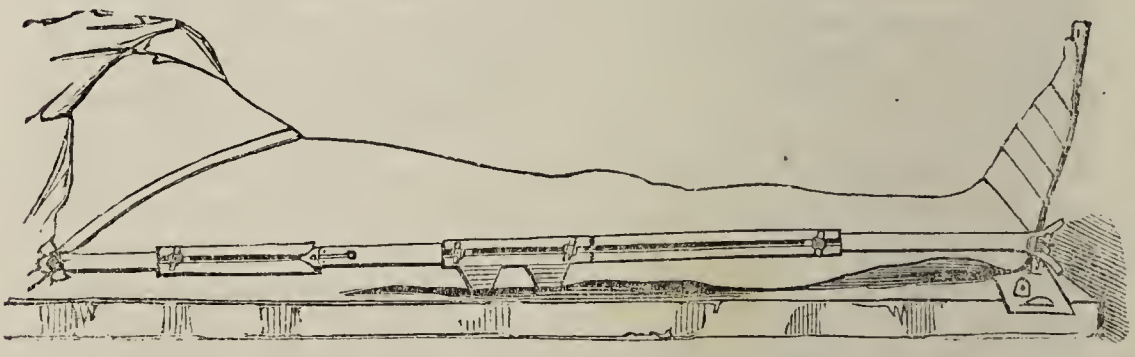
A scoop, placed under the splint at the injured part, will also receive the discharge escaping from beneath the dressings through the intervals between the strips of bandage, thus preserving the bed and clothes clean and wholesome even in the worst case.

When the foot of the patient is securely fixed to the foot-piece

any amount of extension can be made by loosening the finger-screws at (3 3), fixing the thigh-part of the splint to which the perineal band is affixed (for the purpose of counter-extension) and drawing out the slides of the leg-pieces by traction at the foot, and thus extending the leg. When the requisite extension is made, the whole can be securely fixed by again tightening the grasp of the screws. In my original splint the extension was effected by a suitable extending-screw attached to the foot-piece; but I found in practice, that it complicated, added greatly to the expense, and offered no compensating advantages over that already described, so that I abandoned it, as well as some other screws which were fixed to the slides at *b* and *c*, for the purpose of expanding or contracting the breadth of the fracture-bed between the leg-pieces (3 3), and I now retain the simple slide motion at these parts.

The great but actually little understood advantages of the sling posture, are secured by suspending the splint in the accompanying cradle. The form of the cradle portrayed in the cut is not quite that which I now use. It is capable of being taken to pieces, like the the whole of the splint, by loosening the screws at *f f*, and removing the cross-bar, and as a joint exists at *e e*, the whole can be folded up into a convenient form; indeed, the whole splint and cradle can be wrapped up into a comparatively small parcel portable on the front of the saddle, or under the arm to any distance without inconvenience.

*A long straight splint, formed by joining the lateral thigh and leg slides together (which can be used with or without the foot-piece.)*

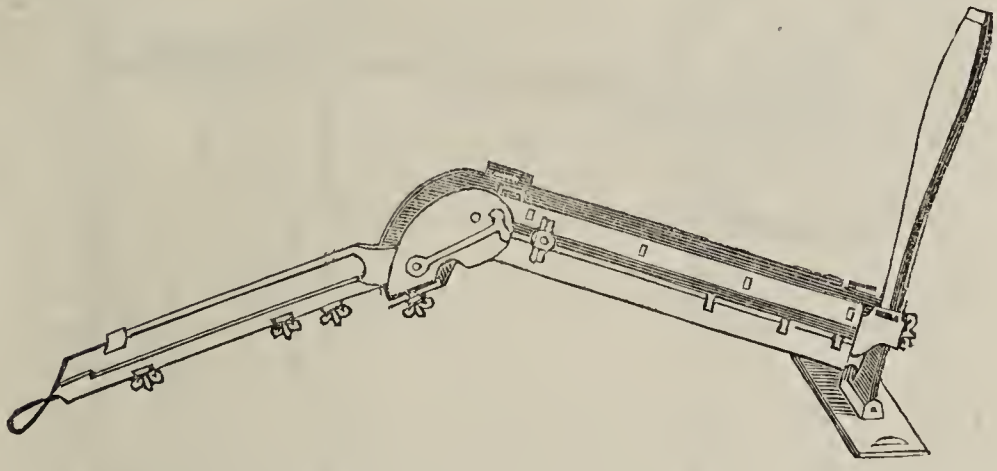


The additional slide-piece (5) (seen in the first cut) can be used alone, or united with the foot-piece (4), in fractures or dislocations about the leg, It can also be attached to the lateral thigh and side-piece (2), and thus forms a convenient long straight splint, applicable to fractures of the thigh, &c. The preceding woodcut illustrates the splint formed by the junction of the parts mentioned, and with regard to size will fit any limb, and may be used entire or in parts.

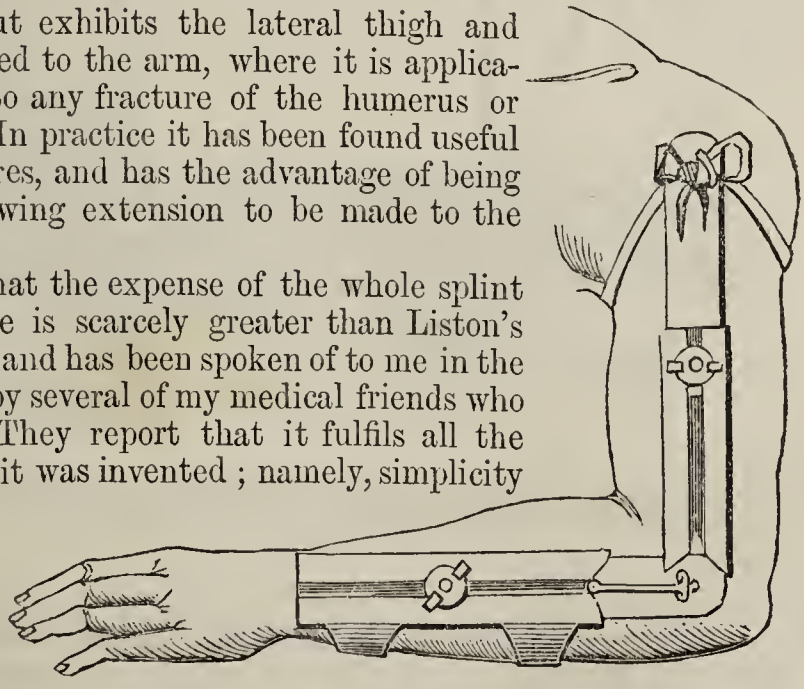
When the lateral thigh and side-piece is removed from the complete splint to form the long straight splint seen in the preceding cut, the resulting splint resembles in all respects the common Liston's or Mc Intyre's double-incline plane fracture-beds, and may be used for all

the purposes for which these are suitable, having also the additional advantages of being capable of exact adjustment to the size of any limb, with moveable pieces of bandage at the back of the leg, to enable the surgeon to inspect and dress all parts of a limb with compound or other fractures, and the ability to hang it in a sling-cradle, if necessary.

The following cut shows this portion of the splint reduced to its smallest size, and that when the complete splint is deprived of the lateral thigh-piece and cradle, a splint is formed similar to Liston's or Mc Intyre's.



The next cut exhibits the lateral thigh and side-piece applied to the arm, where it is applicable as a splint to any fracture of the humerus or elbow-joints. In practice it has been found useful in those fractures, and has the advantage of being capable of allowing extension to be made to the limb.



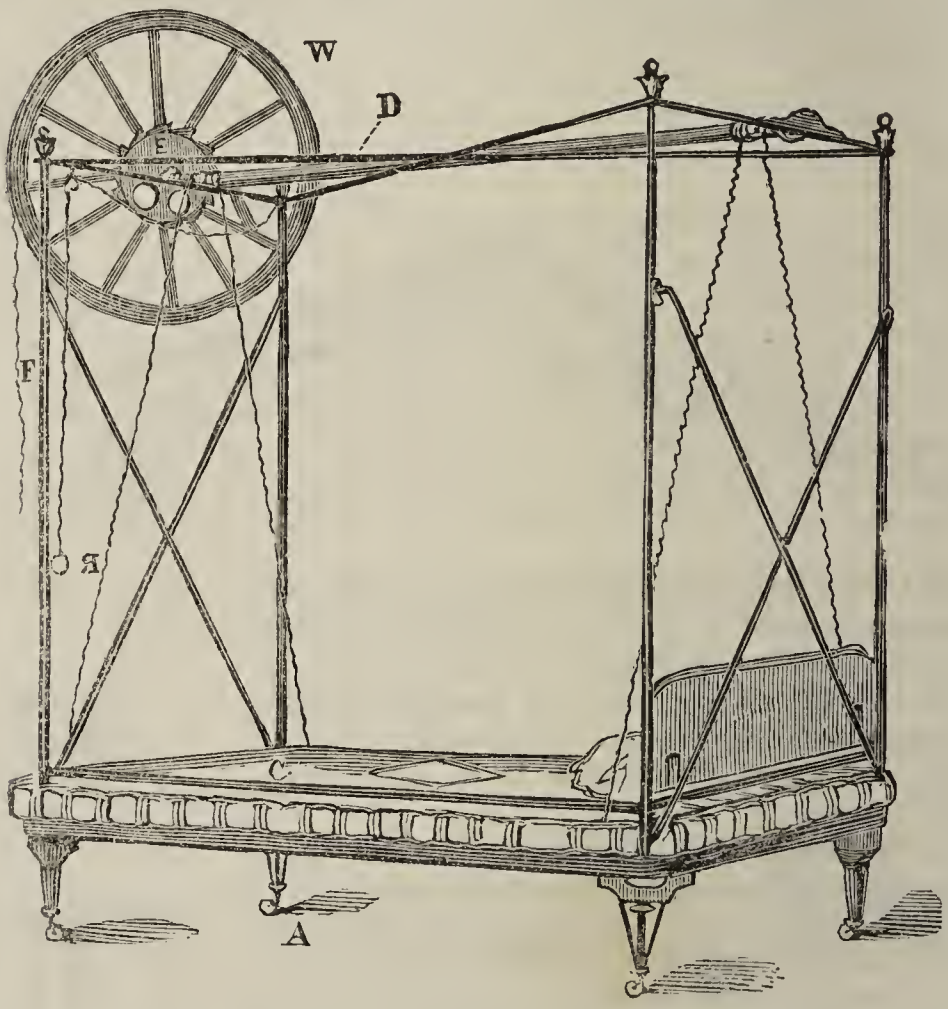
I may add that the expense of the whole splint with the cradle is scarcely greater than Liston's ordinary splint, and has been spoken of to me in the highest terms by several of my medical friends who have used it. They report that it fulfils all the ends for which it was invented ; namely, simplicity of principle, and capability of adaptation to all fractures of the extremities, or to any size of patient.

At a future opportunity I will introduce it in connexion with several interesting cases, usually found most difficult to manage, and in which it has proved an efficient instrument of cure.—*Med. Times and Gaz., Dec.* 31, 1853, *p.* 676.

## 80.—LIFTING APPARATUS FOR BEDS.—THE LAWSON BED AND TRANSFERRER.

[Mr. Fowler, house-surgeon to the United Hospital, Bath, brings forward an invention of Henry Lawson, Esq., of Bath, for the purpose of lifting patients in hospitals. The following wood-cut will fully illustrate the description.]

*Fig.* 1.




A is a four-post bedstead, of any kind; in the Bath Hospital it is of iron, and with French castors, for the facility and ease of being moved.

B is a mattrass of any kind; either of wool, or flock, or feathers.

C is an oblong strong frame, on which is strained a strong cloth, well supported by interlaced webbing beneath, and having an aperture of requisite size in the middle.

D is an axis, with a grooved wheel fixed at one end, and resting on rollers placed close or near to the wheel, the other end of the axis resting upon the bar, as shown in the drawing. From this axis four cords descend, which are fastened by hooks to the four corners of the frame C.

E is a ratched or notched wheel, with the teeth peculiarly formed, so as to prevent accidents; and appertaining to which wheel is a ratchet or click, which communicates by a cord with the ring R.

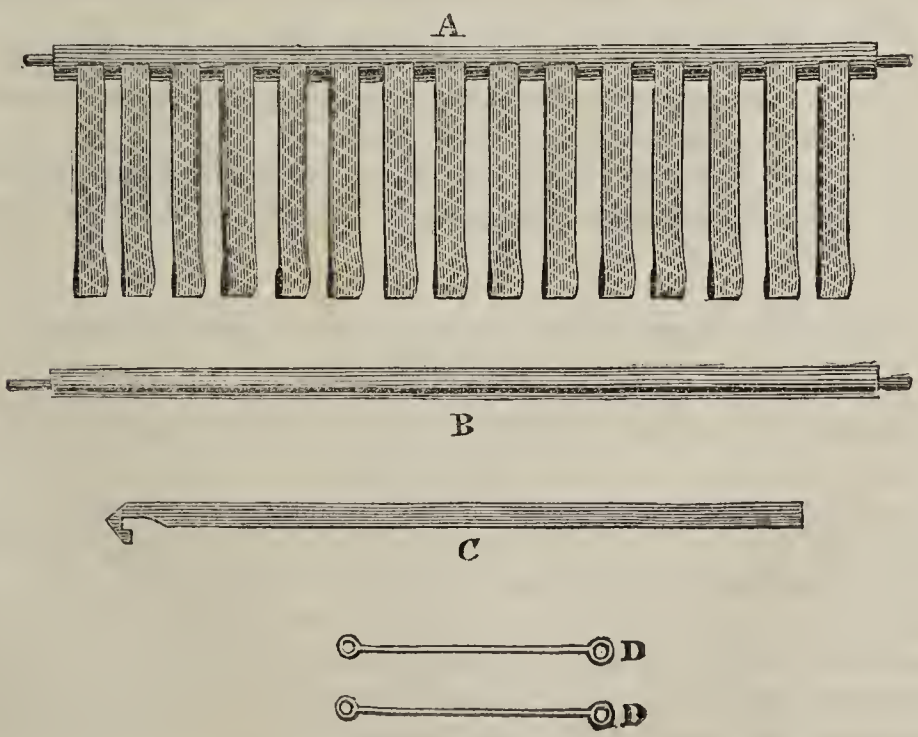
F is a cord which goes twice round the wheel W, and hangs near to the ring R, ready for use.

The purport of this arrangement is to enable an individual nurse to attend to the wants of a paralysed patient without loss of time or need of assistance. On the wants of the patient being made known, the nurse draws the cord F; and the lines or cords fixed to the corners of C, by winding round the axis D, raises the patient to the required height, and he is retained there by the click or ratchet near E. When it is required to replace the patient on the mattrass, the nurse pulls the cord F with one hand, and with the other pulls the ring R, which releases the click, (in consequence of F being first pulled), and the patient can now (by the nurse permitting the cord F to slide slowly through her hand) be lowered with the necessary gentleness, and placed again on the mattrass, without noise or derangement of his recumbent position.

The bed at Bath is furnished with a duplicate of the frame C, which may easily be substituted for the one in use, when, for the purposes of cleanliness, such change is advisable.

The benefits that are sought to be attained by the above contrivance are, the great facility with which the heaviest and most helpless patient can be moved and adjusted for the operations of nature; that it can be manufactured by any good carpenter, having no noisy metallic

*Fig.* 2.



wheel-work or winches, or complex machinery, in its construction; that it may be transferred, without fear of derangement, to any house where it may be required, and placed on any four-post bedstead that presents itself, with the greatest ease and facility.

*Dimensions of Apparatus.*—Diameter of wheel, three feet five inches; diameter of axis, two inches; length of axle six feet four inches; bedstead, six feet five inches by three feet three inches; height from floor to axis, seven feet; height from floor to upper surface of mattrass, two feet.

Fig. 2 represents an instrument or machine whereby the most severely wounded person can be transferred from one bed to another, or one place to another, with the least risk of deranging dressings, or or inflicting pain. A is a pole, about seven feet long, to which is affixed, at equal distances, and equal spaces between, a number of loops of webbing or girthing, about two feet six inches long, and two inches wide. B is the antagonist pole. C is the needle for drawing the loops. D D are iron stays, about two feet four inches long.

When the patient is to be removed or transferred, the pole A must be placed on the bed, alongside the patient, taking care to have all the loops on that side; then pass the needle C under the legs of the patient, either above or below the sheet on which he lies; and hooking it into the loop of the first web, draw it towards you. Do so in succession up to the head, and the patient will then be lying on the webbing. Now slip the pole B through the loops of the webbing, and place the iron rods D D on the ends of the poles, and the machine is ready for use. Two men—one at the head, and the other at the foot—can now raise and transfer the patient with ease and safety to wherever required.

The transferrer will, in many cases, by not using the iron rods, be found more safe and convenient than a chair for the removal of weakly and somnolent patients up and down stairs.

The Lawson bed and transferrer is made by Mr. Roper, carpenter and builder, Guinea-lane Bath.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 651.

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## 81.—ON THE PEDUNCULATED EXOSTOSIS OF THE LONG BONES.

By James Syme, Esq., Professor of Clinical Surgery in the University of Edinburgh.

As the expression exostosis literally implies merely an inordinate growth of bone, it has been employed to denote a great variety of morbid conditions in which this circumstance happens to exist. The "callus" that repairs a fracture—the new osseous shell which supplies the place of a dead shaft—the spina ventosa or expansion caused by the accumulation of pus or other fluid—the spicular or foliated excrescences that shoot into the substance of an osteo-sarcomatous

tumour—and the bony prominences of morbid growth resembling the natural processes connected with the origin and insertion of muscles, have all been included within this comprehensive title. It is to a particular form in which the last mentioned of these productions appear, that I now wish to direct attention.

[Puberty is the period of life when these simple growths are chiefly developed. Indeed, in young and growing persons, the symmetry of the bone is often lost from the processes and articulating extremities growing more rapidly than the other parts, but as a rule we may always express an opinion, that in time the proper proportions will be restored.]

The constitution of these growths is quite similar to that of the spongy extremities of the long bones, being composed of a thin, osseous lamina externally, and a more or less compact, consolidated texture within it. While enlarging, they have an incrustation of cartilage, whence they have been called by Sir A. Cooper and others —in my opinion, very improperly—the cartilaginous exostosis, since any bone in the body might with equal propriety be designated cartilaginous: and as this nomenclature is sure to occasion confusion between the truly osseous growths and those of a fibro-cartilaginous nature, which anatomically, pathologically, and practically require to be carefully distinguished. Thus Sir A. Cooper describes under the same title, well marked cases of these two most dissimilar conditions, and in his lately published work, Mr. Paget has pursued this course with, if possible, still less regard to the diversity of the tumours thus associated together. Anatomically, they differ in constitution, which, in one case, is the simple bony texture encrusted externally, so long as it is growing, by a plate of cartilage; and, in the other, it is a fibro-cartilaginous growth enclosed within the expanded bone, or dispersed through the interstices of its honey-comb looking structure. Pathologically, they differ in the one sort of growth being limited in its tendency to increase, and producing no inconvenience except from the peculiarity of its position, as when seated under the nail of the great toe, while the other has no bounds to its enlargement, which depends upon the fibro-cartilaginous substance, and not upon the bone. Practically, they differ in this important respect, that while the one may be removed by division of its neck or base; the other cannot be extirpated except by taking away the whole bone, or dividing it at a sound part beyond the confines of the disease. It was from not attending to these distinctions that Mr. Liston, who first drew professional attention to the exostosis of the toe, insisted upon amputation as essential for the patient's permanent relief; while due regard to them led me to practice removal of the growth alone, as sufficient for attaining the object in view—a procedure which, though for a time reprobated by Mr. Liston and his followers, has long since become the established rule of practice. On the other hand, a knowledge of the

depth to which the fibro-cartilaginous growth strikes its roots into the bone affected, has put an end to those painful scenes which surgeons of the present day witnessed in their youth, when attempts were made, of course in vain, to dig out such tumours from the upper and lower jaws. By disarticulation or division of the bone, where ascertained to be sound, the patient is now effectually relieved in a few minutes, instead of being subjected to the prolonged torture of hours, without the chance of benefit to his case, and with the greatest risk of its aggravation. Having happened to remove the first superior maxillary bone that was removed upon this principle in Great Britain, and having entered upon the records of surgery the first instance of this operation which they contain, I must here protest against the unjust appropriation of any credit that may be due on this account, which has been copied from each other by the writers of students' books, of whom I may mention Mr. Erichsen as the most recent. My operation was performed in the Edinburgh Surgical Hospital on the 13th of May 1829, and the case was published in the 'Edinburgh Medical and Surgical Journal' for July of the same year, so that the question of priority admits of no dispute.

Under the title of cartilaginous tumour, have been comprehended two morbid conditions of the osseous system, of the most different natures, which require to be distinguished for the establishment of their proper treatment. In regard to the osseous growths, associated with malignant tumours, serous cysts, and abscesses—as the new-formed bone is always perfectly sound in its textures, and owes its production to the influence of another morbid condition,—I think the disease in such cases should be named, not from the exostosis, but from the cause which has occasioned it, whether this may be a growth, a cyst, or an abscess. The expression exostosis would thus be restricted to its proper sense of denoting the change effected in the bone itself, and would only require to be farther divided into the solid, hollow, and spicular forms. Attention would thus be directed to the disease essentially requiring remedy, and not to an accidental concomitant.

I may now proceed to the special object of this communication, which is to explain a circumstance in the constitution of the simple exostosis when it proceeds from the long bones of the extremities, which may be of considerable consequence in regard to both its diagnosis and treatment. The most frequent situations of this growth, are the inner side of the thigh bone a little above the condyle, and the neck of the humerus, just below the tuberosities into which the scapular muscles are inserted. It has a neck from half an inch to an inch in length, which is usually placed obliquely in relation to the shaft, and beyond this expands into an irregularly rounded form, nodulated on the surface, which is covered by a thin incrustation of cartilage, that presents a shining, pearly lustre, and has no communication with the surrounding parts. In the case of a young man who came from Rothesay to the hospital for the removal of an exostosis on the *outer*

side of the thigh bone, I find the same characters. The tumour consists of perfectly sound osseous substances, more or less tensely cancellated.

About five-and-twenty years ago I was consulted by a gentleman residing in this city, on account of a very large exostosis, in the usual situation, on the inner side of the thigh. He was a tall, strong, active man, and, in consequence of over-exertion, was suffering from swelling, redness, and pain of the limb at the seat of enlargement. I advised soothing measures, and expressed the opinion that an operation would not be requisite if he abstained from undue exertion in future. I frequently afterwards saw this gentleman, apparently in the enjoyment of perfect health, and had no reason to entertain any doubt as to his being so for more than twenty years, when, in the month of February 1851, Dr. Handyside asked me to see him, on account of an alarming change that had taken place in the condition of the tumour. The thigh was considerably swelled and painful, especially when pressure was applied on the seat of the exostosis, which could not be felt distinctly in consequence of the thickening around it that had taken place, together with the effusion of some fluid that was detected by a deep fluctuation. In explanation of this circumstance, as it was stated that the patient had lately been leading a life of much greater exertion, particularly in walking, than he was previously wont to do, Dr. Handyside enjoined rest, and, after a time, applied a blister. We thought that there was something seriously wrong, and were not free from the apprehension of cerebriform degeneration, but resolved to try the farther effect of rest, with gentle pressure. In the course of a few weeks the swelling and tenderness disappeared, the fluctuation could no longer be perceived, and the exostosis was felt no less distinctly defined than in former times.

I felt quite at a loss to account for this case, until the following one completely explained it. In November of last year Dr. Duncan asked me to take under my charge, in the hospital, a female servant who, in crossing the ferry from Fife, had received a blow, which was supposed to have detached an exostosis from its usual seat of attachment, above the knee, on the inner side of the thigh bone. As the limb was very much swelled, and extremely painful, I feared that delay might lead to suppuration, and therefore cut freely down to the exostosis; but in doing so was surprised to find a quantity of serous fluid, tinged with blood, lying between it and the surface immediately surrounding it. The whole truth at once appeared, and I no longer felt any difficulty in accounting for the smooth shining surface presented by growths of the kind in question, or for the fluctuation which, in the former case, had so much perplexed Dr. Handyside and myself. It was plain that a synovial membrane surrounded the exostosis, and was reflected from its neck, so as to afford a double covering, just as on the joints—the half of one being

thus represented by the osseous growth, its crust of cartilage, and investing membrane.

I hope that the condition of what may be called the pedunculated exostosis, thus fully ascertained, may be of service, not only in its diagnosis, but also with reference to the means of remedy, since the complete insulation from surrounding textures, except at the comparatively small point of its attachment to the bone affords great encouragement to attempt removal, even under circumstances apparently much opposed to success. Thus, in the case of a young lady from Lancashire I saw lately with Dr. Simpson, there was an exostosis at the neck of the humerus, which pressed upon the axillary nerves, so as to occasion great and increasing distress; and, from this position, had been deemed beyond the reach of removal. But, having ascertained that the point of attachment was at the posterior surface of the bone, I made an incision between the deltoid and triceps, exposed the neck, detached it by cutting pliers, and extracted the exostosis, with hardly any bleeding, and no injury to the neighbouring parts.—*Monthly Journal of Medical Science, January* 1854, *p.* 1.

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82.—*On the Treatment of Fractures of the Base of the Cranium.* By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital.—If the patient be collapsed from the immediate effects of the accident, cover him up with blankets next his skin, add artificial heat by placing bottles of hot water in his bed, but not in contact with the skin; give brandy or ammonia to aid reaction, and as soon as vascular and nervous reaction are sufficiently re-established after the accident, as evidenced by the gradual recovery of the natural temperature of the the body, and by the improved state of the pulse, purgatives should be employed to clear the bowels efficiently. If the patient has been accustomed to take large quantities of stimulants, the same kind of drinks must be had recourse to, especially if the pulse flag, or the temperature of the surface be disposed to decline. After the purge has acted satisfactorily, give the patient mercury and chalk and Dover's powder: if an adult, five grains of each twice or three times daily during a few days, or until he become slightly mercurialized. The patient to be kept as quite as possible reclining in bed, and not allowed to sit up or attempt to walk. If the pulse become hard, full, and incompressible, cup the back of the neck or apply leeches to the head, or bleed from the arm, but do it with care and discretion. Should the patient be very irritable, the head a little hot, the pulse a little accelerated, thirst slightly increased, the skin hotter than natural and dry, and the tongue furred and white, apply a blister to the nape of the neck, and give diaphoretics in the form of the solution of acetate of ammonia. Farinaceous food and iced water to be the first diet; if

no fever or untoward symptoms arise within three days, then beef-tea and milk may be taken, and subsequently solid animal food.

Of course the directions for diet or medicine treatment must be modified in relation to age, constitution, actual condition, and previous habits of the patient; here you must fall back upon the general principles of practice.—*Lancet, Dec.* 31, 1853, *p.* 619.

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## 83.—ON DISEASES OF THE JOINTS.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[In the present article Mr. Coulson traces the *general characters of articular disease in three different structures*, viz., the *soft parts*, the *cartilages*, and the *bones*.]

Many writers on diseases of the joints deny that the capsular and ligamentous tissues can be the seat of any elementary change, because they are not endowed with blood-vessels. It is unnecessary to examine whether this opinion be correct or not, since a certain quantity of cellular substance is always mixed with the fibres of ligamentous tissue; and hence the ordinary phenomena of inflammation may be observed in the capsules or ligaments of joints, although the true fibrous tissue may not be vascular. Inflammation, with its well-known phenomena and effects, plays the chief part in the production of the morbid changes observed in the joints, as in nearly every other region of the body. All the superficial joints are more or less subject to inflammation, which may commence in the soft parts, in the cartilages, or in the bones.

Let us follow it through each of these divisions. When soft parts are inflamed they always present a more or less vascular and injected appearance, from accumulation of arterial blood in the vessels of the tissue. This increased vascularity is the most frequent and general lesion observed in the soft parts during articular disease. It is often seated in the synovial membrane, but still more frequently, I believe, in the cellular substance, which unites the external surface of that membrane to the surrounding parts. One of the earliest effects of the inflammatory condition just alluded to is an increased secretion of synovia into the cavity of the joint, or of a fluid analogous to that poured out by inflamed serous membranes. In most cases the fluid contained in the joint is a mixture of synovia and turbid serum, but, as we shall presently see, the tendency to effusion varies much in different joints. Any severe degree of inflammation of soft parts is usually attended by effusion of coagulable lymph, and this substance is probably the chief agent through which are effected the numerous and apparently independent lesions that we find in cases of long-standing articular disease. I cannot now enter into the interesting history of coagulable, or as it might more properly be termed, organizable, lymph. My limits will only permit me to notice a few points in connexion with

our present subject. The lymph effused from the vessels of an inflamed part is chiefly composed of serum and fibrin, and is distinguished from other secretions by the property it possesses of becoming organized into a vital tissue, and of subsequently passing through a series of transformations connected with the repair of injury in different structures.

This is an important point to bear in mind, for it affords us an explanation of the diversity of morbid changes often found in the same joint. The earliest transformation which effused lymph undergoes is coagulation, whence arise those whitish false membranes you have all seen in cases of inflammation of serous cavities. These false membranes are often found in connexion with inflammation of the synovial membranes of joints. The next stage of transformation of plastic lymph consists in its being penetrated by vessels carrying red blood. The false membrane is now being organised for repair; it becomes more or less vascular, and is endowed with two of the main properties of living tissue,—viz., absorption and secretion. In this stage the plastic lymph often assumes the appearance of granulations. In the joints it may undergo still further transformations, and pass successively into the fibrous, lardaceous, cartilaginous, or osseous tissues. The lymph, in a word, has a tendency to assume the nature of the tissue it is intended to repair, or in which it has been deposited. These various changes may be traced satisfactorily in many cases of long-standing articular disease. The vascular transformation gives rise to the papillary or granular eminences which often cover diseased synovial membranes. In a more advanced stage the fibrinous element of the false membrane disappears, and is gradually replaced by gelatine; the tissue assumes more and more of the fibrous appearance; it is found on the articular surfaces of the bones when denuded of their cartilages; but more frequently it is connected with the periosteum and ligamentous structures, and it is the common cause of that mode of reparation known under the name of false anchylosis. But the fibrous transformation now spoken of is often, in the great joints at least, preceded by another change, to which the name of lardaceous has been given. This tissue frequently exists in joints said to be affected with white swelling; it is a species of cellular web, the meshes of which are filled with serum and fibrin; it is of a whitish colour, flexible, and of some consistence, and is most often found in the ligamentous tissues, or in the cellular substance external to the synovial membrane. Finally, in the most advanced stages of articular disease the effused lymph may be found converted into cartilaginous or even osseous tissue, but these transformations are very rare.

The secretion of pus is a common termination of severe inflammation. It may be derived from the inflamed vessels, though many surgical pathologists insist that pus cannot be secreted by a serous membrane without the previous formation of an organized false membrane. The purulent matter contained in diseased joints does not

present any peculiarities worthy of notice; it is generally found in the cavity of the articulation, but may be infiltrated into any of the soft parts, or into the adventitious tissues of which I have just spoken.

Tubercular matter is also occasionally found infiltrated into the same tissues. Tubercular disease of the joints is, however, more intimately connected with the bones than with the soft parts, and I shall therefore postpone any notice of it for the present.

Ulceration of the soft parts generally occurs at an advanced period of articular disease, and is always, I believe, an effect of some other pre-existing lesion. The cartilaginous surfaces of the bones entering into the composition of a joint are, as might naturally be expected, often found more or less altered during the course of articular disease; but surgeons are by no means agreed whether such alterations are to be regarded as primary changes or secondary effects. In fact, it is still a disputed point whether the articular cartilages are endowed with vitality, or whether the synovial membrane extends over the whole of the surface of the cartilage comprised within the cavity of the joint.

Many of the continental anatomists maintain that the synovial membrane does not cover more than a few lines of the free surface of the cartilages, which merely fulfil the office of protecting the bone, and are not endowed with life, but are analogous to the nails, enamel of the teeth, &c.

On the other hand, Sir B. Brodie, Mr. Mayo, Mr. Liston, and most English surgeons, attribute independent vitality to the cartilages, have traced vessels into them when diseased, and believe "that they grow and may be destroyed nearly in the same way as other parts of the body." I am inclined to adopt the same opinion, as being more conformable to the results of pathological observation, and I also believe that the synovial membrane is continued over the free surfaces of the cartilaginous ends of bones. However this may be, it is certain that the articular cartilages are frequently the seat of morbid change, although pathologists, who deny their vitality, will of course regard such changes as secondary. The most frequent morbid appearance by far is ulceration, yet the manner in which a portion of diseased cartilage is removed has not been clearly made out; for in many cases the loss of substance bears little or no resemblance to that effected by the ulcerative destruction of soft tissues in other parts of the body. The question of ulceration of cartilage is, however, such an important one, that I shall reserve its pathology for future consideration.

Besides ulceration, many other morbid changes may be observed in the cartilages of diseased joints. In some cases the cartilaginous tissue appears to have undergone a process of hypertrophy, being increased in mass without any appearance of disease having existed in it. This change must be regarded as an effect of altered nutrition, just as one species of ulceration is, the nutrition being augmented in the former and diminished in the latter case. The degeneration of

cartilage into the fibrous tissue already mentioned is another morbid change often observed in articular disease, particularly in aged persons. The cartilage looks as if it were being disintegrated or resolved into its original elements. The fibrous bands become very distinct, and can be traced from the articular end of the bone through the cartilage beyond which they slightly project into the cavity of the joint. A certain degree of tumefaction, with or without softening of the cartilage, sometimes accompanies the state of fibrous degeneration. The tumefaction of the cartilaginous ends is usually partial, the cartilage itself being of a yellowish colour and soft. It is never a primary lesion, and is only met with in cases of long-standing disease, when the joint has been kept for a considerable time in a state of perfect rest. Lastly, the cartilages may be more or less completely separated from the ends of the bones, and found loose within the cavity of the joint. This lesion can only arise after the destruction of the peculiar tissue which unites cartilage to bone, and such destruction can evidently be traced either to absorption through granulations developed between the cartilage and bone, or the effusion of pus into the same tissue.

The lesions of the articulating ends of bones have next to be considered in a general manner; many of them are the same as those already described as affecting the soft parts; for in both, inflammation may be followed by vascular injection, effusion of coagulable lymph, secretion of pus, and ulceration.

The lesions peculiar to bone are, deposit of tubercular matter, necrosis, and that particular change consisting in red softening, which for want of a better name I may denominate splenization. The various effects produced by the organization of lymph effused into the cancellated tissue form the majority of lesions observed in chronic disease of the bones. The lymph may pass through the same transformations and produce nearly the same secondary lesions as in the soft parts. The articular ends of bones may be the seat of tubercular deposit, presenting itself under the form of infiltration or collected into masses. In the former case we find a quantity of whitish cheesy matter in the cells of the bone; in the latter case a tuberculous matter, which presents no difference worthy of notice from tubercle in the lungs or other parts of the body. The tubercle is contained in a smooth cyst, the walls of which are often infiltrated with tubercular matter. The osseous tissue which immediately surrounds the tubercular mass is generally more or less indurated, but in a few cases it has been found softened, probably because the tubercle has not excited a sufficient degree of inflammation in the neighbouring osseous tissue to produce secretion of osseous matter. Tubercular deposit seldom exists in bones for any length of time without producing a variety of secondary lesions. One of its first effects is to excite ulcerative inflammation, accompanied by abscesses, and extending towards the periosteum or articular cavity. The joint soon becomes involved, and as the disease

advances its constituent parts are gradually destroyed, the effused lymph within it, or the synovial membrane being often infiltrated with tubercular deposit. The description which I have just given applies to tubercular disease when confined to the bones. This, however, is rare. In the great majority of cases the tubercular affection extends to the various elementary tissues of the joint, involving hard and soft parts, the ligaments, bones, membranes, &c. Caries and necrosis are two lesions which affect bone, the one being somewhat analogous to ulceration, and the other to mortification. Both lesions are often found in joints which have been the seat of disease for any length of time. When any portion of a bone, from injury, impeded nutrition, &c., loses its vitality, it dies like other parts of the body, and Nature sets about a process for its removal in the best way she can. Absorption of the surrounding tissues is the method which she generally adopts. Sometimes this takes place without any trace of inflammation, but, generally speaking, the removal is effected by an ulcerative inflammation similar to caries. The latter, in its true signification, is confined to the cellular or spongy tissues of bone, and it sets in after the deposit of pus or tubercular matter in these tissues, or when the organized lymph, of which I have spoken, has been converted into a granulating substance capable of effecting absorption. The frequent occurrence of this granular substance with caries would lead to the theory that caries is probably, in all cases, preceded by more or less inflammation of the spongy tissue of the bone; but the reverse of this is not true, for inflammation of bone is not always followed by caries.—*Lancet, Feb.* 18, 1854, *p.* 177.

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## 84.—MODE OF EXAMINING THE HIP-JOINT IN DISEASE.

By Wm. Coulson, Esq., Surgeon to St. Mary's Hospital.

[Cases of this disease occur in which the deviation from the healthy form may be either very great or only slight. The patient must be uncovered and examined both in the erect and recumbent positions.]

On examining the limb, you will observe how the patient, if erect, avoids to the utmost of his power every moment of flexion or extension, keeping the pelvis slightly bent forwards, the leg flexed on the thigh, so that the heel does not touch the ground, and the whole limb slightly rotated outwards. This is the natural position, and any deviation from it will cause more or less pain. Hence you must ascertain the effects produced by different degrees of rotation, eversion, &c. At a very early period, probably from the round ligament being involved, eversion and abduction of the limb produce the greatest degree of suffering, which is also excited if you press the head of the bone against the cavity of the acetabulum. Pain is likewise excited by forcible flexion of the thigh, and at a later stage by rotating the limb inwards. In fact, nearly all the motions of the joint will be

found limited to a certain degree, not so much from any structural change, as from the severe pain excited by accidental pressure on the tissues primarily affected.

The hip-joint is enveloped by a thick layer of muscles, which prevents any external appearance of swelling at an early stage; but if you examine the buttocks, you will find a slight diminution of bulk on the side corresponding to the affected hip, and this wasting increases with the progress of the disease, until it becomes a striking symptom. You will also take care to observe whether the lower edges of the nates are on the same level or not.

But the principal point which we have to determine is that relative to elongation of the limb. I have already explained under what circumstances this apparent lengthening takes place, and it now only remains to teach you the best mode of effecting the different measurements of the limb, with the view of ascertaining how far the difference in length of the lower extremities may be real or apparent. Sir B. Brodie advises us to measure the distances from the anterior-superior spinous process of the ilium to the patella or ankle on both sides, when we shall find that these distances are equal; but many circumstances may cause a difference of distance between these two points, although the limb preserves its natural length. The ordinary method of proceeding is to place the patient on his back, with the legs slightly bent at the same angle, and parallel to each other. The fingers are next placed on the spinous processes of the ilium, and a median line is drawn down between the legs, from the centre of the distance between the processes. This done, it is easy to see whether the knees, ankles, and heels are on the same level. To determine whether or no one hip is more elevated than another, a line may be drawn along the middle line of the body, and then another line crossing it from one spinous process to the other. If the crista ilii be on the same level, these two lines will cut each other at right angles; if not, the transverse line will form an acute angle at the side next the depressed ilium. Dzondi and some other surgeons recommend us to examine the patient seated in a chair. The lower extremities are placed paralled to each other, and care is taken that the transverse axis of the pelvis forms a right angle with the axes of the thighs. The two knees are now compared, and the prominence of either will be readily detected. The feet are next elevated, flexed on the thighs, and both limbs extended as completely as possible in a straight direction; after which, the positions of the heels are to be compared together. Having examined the patient in the sitting or recumbent postures, we must finally examine him while standing. In this position, the surgeon will direct his attention to the state of the nates and spinal column, the former being wasted, the latter generally presenting a curvature to one side; he will also have a better opportunity, in this position, of ascertaining how far one trochanter may be more prominent than another, what degree of weight is voluntarily

thrown on the affected limb, and many points which might have otherwise escaped notice.

The various methods of determining the length of the limb, which I have just noticed, should not be neglected; but M. Bonnet has clearly shown, that they only enable us to ascertain one out of the many conditions which exist together, and in their sum total constitute the change in the limb observed during the early stage of articular disease. They do not enable us to take into account the degrees of adduction, abduction, or rotation of the femur, or to distinguish functional from organic elongation of the limb.

The state of the groin must also be attended to; for some enlarged glands will often be found here at an early stage, or some slight tumefaction; and a good place to exercise pressure on the joint is a little below the groin, on the outside of the femoral artery, after it has descended below the os pubis, for here the articulation is least covered by soft parts.

The history of the case and the general symptoms may lead us to suspect the development of other and more important changes, the principal of which is abscess, with its characteristic physical sign, fluctuation. I have already spoken on this point, and shall now only add, that abscess of the hip-joint may sometimes be detected at a very early period of its formation, by placing one hand over the iliac fossa, and the other over the upper and inner part of the thigh. On alternate pressure between these two points, a sense of fluctuation will sometimes be felt here, though not distinguishable at any other part of the articulation; and I have already explained the reason, showing how perforation of the capsule at its inner and anterior portions, gives rise to an effusion of pus into the sheath of the psoas and iliacus muscles.

The changes in the limb hitherto observed, are for the most part functional; but as the disease advances, the bones, cartilages, and ligaments of the joint are gradually destroyed, and other changes, corresponding to the extent of mischief, are to be sought for. The principal are, shortening of the limb, or displacement of its articular extremity. To distinguish these states, and form some notion of the amount of destruction by which they are accompanied, a most careful examination must be made of the limb, and particularly of the relations which the osseous eminences bear to each other. The position of the patient will also be noticed, for it is characteristic. He generally twists himself into an awkward posture, making the affected hip bulge out, and throwing the knee of that side over the other, so as to relieve the head of the femur from pressure. When actual dislocation, however, has taken place, and the head of the bone becomes fixed in its abnormal situation, the positions of the patient and of the limb, will be influenced by the particular form of displacement.—*Lancet, April* 15, 1854, *p.* 414.

85.—*Treatment of Hip-joint Disease.*—The mode of treatment pursued by Professor Carnochan in morbus coxarius has been very successful. He relies principally on constitutional treatment, abandons the use of splints and confinement, permitting and encouraging the use and motion of the affected side, and allowing the abscess to open spontaneously. The number of cases now in progress of convalescence, the general improvement in the physical appearance of the patients, and the absence of the distressing hectic, indicate the soundness of the principle upon which he proceeds.....The number of victims of Pott's disease of all ages is by no means the least interesting feature of practice to be seen here. With these also the principal direction is given to constitutional treatment, rest and counter-irritation of a mild character being the adjuvant means employed.—*American Hospital Records.—Lancet, April* 15, 1854, *p.* 423.

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## 86.—CONSERVATIVE SURGERY, AS APPLIED TO THE TREATMENT OF DISEASES AND INJURIES OF JOINTS.

By Henry Smith, Esq.

The author commenced the paper by dwelling upon the importance of conservative surgery in general. During the last few years it had made rapid progress, and surgeons are now employing its resources in instances where, but a few years ago, they were little thought of. But, in diseases of the joints more especially, its greatest triumphs are seen; and not only with reference to operations performed upon these parts, but where attempts are made to arrest destructive disease, and prevent operations. The symptoms, pathology, and progress of diseases of the joints, were gone into by the author, who stated, that when called in to treat a serious case of affection of any joint, the surgeon should at once endeavour to dismiss from his mind the idea that an operation will be necessary, and thus he will be the more induced to put in force those resources which constitute the elements of conservative surgery. These are a skilful application of local and general remedies, perfect rest of the part affected, and a patient reliance upon the efforts of nature. It was extraordinary what a vast amount of benefit might be effected by patiently employing these means in instances where apparently destructive disease of the joint was imminent. The great importance of rest was more fully dwelt upon, and some instances were mentioned which in its employment had been attended with excellent results. One instance was, where a middle-aged man had received a severe blow on the shoulder, and had rapidly got destructive inflammation of the joint; ulceration of the cartilages took place, and the general system was so much disturbed, that death appeared to be imminent. The patient was sent to bed, the joint was kept perfectly quiet, remedies were given which removed constitutional irritation, and, by these means, the symptoms

of the disease became subdued, and in a few weeks the patient had a partially stiff joint. In another case, where the author was called, a fine man had received a very serious injury to the knee and thigh, and amputation was proposed, and the instruments were actually taken to the house; but on careful examination, a large quantity of matter was discovered, situated very deeply; free incisions were made, and the patient rallied. Three weeks after this, Mr. Smith saw him again; destructive inflammation had been going on in the knee-joint, and it was now considered proper to amputate the thigh, but the patient strenuously opposed it, and, therefore, the resources of conservative surgery were patiently employed, and with the greatest ultimate success, for, some months afterwards, the man walked some miles to see him, his health being quite restored, his knee being stiff, and the whole limb little shorter than its fellow. In the treatment of diseases of the wrist-joint, more especially were the advantages of rest observed. Some cases were narrated where the advantages of placing the forearm and hand on a splint, in apparently incurable disease in this joint, were most conspicuous. These recoveries were seen, and always more frequently to be expected, when the articular inflammation, and subsequent morbid changes, had been the result of injury rather than of constitutional disease. In these instances more time should be allowed for the beneficial operation of the resources of conservative surgery. The author next referred, at length, to the application of this species of surgery in operations upon the various joints of the body when diseased. Most well-informed surgeons were, now-a-days, more disposed than even a few years ago, to perform limited operations, rather than submit the patients to the loss of an entire limb. When the joint alone was diseased—thanks to the example of Park, Moreau, Crampton, Liston, Syme, and Fergusson—great triumph had been achieved in this department of scientific surgery. The success following resection of the elbow-joint was quite remarkable, and indeed the operation had almost been confined to that and the shoulder-joint, until lately, when inquiry had been made as to what would be the result of its application to the hip. Much opposition was excited against this inquiry being practically carried out; but the operation has been attended with such success that it is now an established one in surgery. Then came the knee, and this question has, and is now, exciting great attention, and some senseless and angry discussion, but, he was happy to tell this meeting, that some very able surgeons had tried the operation fairly, and the result has been most satisfactory. He had recently paid a visit to Jersey, and had examined four out of five cases which have recovered from the operations performed by a most able surgeon, Mr. Jones, and he was delighted with the result. He strongly hoped that the day would come when amputation of the thigh would no longer be performed—in King's College Hospital at least—for disease of the knee-joint, unless there were ample reasons for such extensive mutilation. This

question, like others in surgery, only wanted fair inquiry, and its settlement will neither be advanced nor retarded by hebdomadal or monthly effusions from the pen of those who did not take the trouble to look carefully into the facts, both in favour of and against the operation. The author then referred to the method of making free incisions into diseased joints, as advocated by Mr. Gay, and considered it to be a most important measure, and a step in advance in conservative surgery. He had seen some admirable results produced by incising joints freely, but he could not go so far as Mr. Gay, in supposing that the plan of treatment would obviate excision.—*Medical Times and Gazette, Dec.* 17, 1853, *p.* 642.

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## 87.—ON SUPPURATION OF THE JOINTS FROM INFECTION OF THE BLOOD.

By W. Coulson, Esq. (Read before the Medical Society.)

In this paper, Mr. Coulson discussed the symptoms, nature, and treatment, of a peculiar affection of the joints, which comes on after amputation, puerperal fever, operations on the genito-urinary organs, &c. This disease consists of suppuration within the joints, probably of an inflammatory nature, and generally ending in death. Not long ago, it was divided into nearly as many diseases as it had exciting causes; but the author remarked, that whether of puerperal, traumatic, or other origin, the disease is one and the same, or to speak more correctly, it makes part of one and the same constitutional affection. After having related some cases which illustrated the manner in which the disease may follow the introduction of a bougie for stricture, lithotrity, parturition, and glanders, the author proceeded to describe it, and commenced with one of the most interesting and important forms, namely, that accompanying parturition. Mr. Coulson first, however observed, that the origin, the course, the symptoms, and the morbid anatomy of articular disease, produced by purulent infection of the blood, are of a peculiar kind, different in many essential particulars from what are observed in any other form of disease of the joints. If we are to regard the disease as mere local affections, it is impossible to understand the general symptoms which accompany the disease, its cause, or its rapidly fatal result, for these are quite different from what is observed in the most violent cases of articular inflammation, developed under ordinary circumstances. Everything on the contrary in the history of the disease points to a special origin; its main features are always the same, and although many cases may be attended by symptoms which would seem to indicate a variety of origins, and justify a distinction into several forms, yet these symptoms will be found to depend on accidental circumstances, and not to vary more in individual cases than we find occurring in examples of other diseases, which depend as this one does, on contamination of the blood.

The *pathology of the disease* was briefly, but clearly, given. The joints affected during life, almost always contain more or less pus, and it bears no evident relation to the intensity of the local complaint, or to its duration. In many cases, purulent effusion takes place within a few hours after the first appearance of the local symptoms; and in many other cases, with so little pain, or tumefaction of the joint, as hardly to attract attention during life. The synovial membrane, however, generally presents traces of recent inflammation, though not of a severe degree; it is more or less injected, yet the false membranes of ordinary synovial inflammation are never found; one of the characters being the production of pus, in a rapid manner, with little or no inflammatory congestion of the tissues. In some cases, the synovial membrane has been found quite free from all trace of vascularity, or other lesion. This has been regarded as a proof of the non-inflammatory nature of the disease; but it seems to Mr. Coulson more rational to conclude, that the injection of the vessels had disappeared after the secretion of pus; and it is known that purulent inflammation, under certain circumstances, is of a very evanescent character. In one case, the synovial membrane round the head of the thigh bone, was evidently injected before any effusion of pus had taken place, and it is easy to understand that this injection might have disappeared in a day or two, if the extremities of the capillary vessels had become modified by the changes which ensue on suppuration. The cartilages, ligaments, and other tissues composing the joint, are usually in a healthy state, for the disease is essentially a purulent inflammation of the synovial membrane. In many cases, the cartilaginous coverings of the bones are found to have been more or less eroded or absorbed, and in a very few examples the ulceration has involved the substance of the bone itself. The patient, however, is generally cut off before the disease proceeds so far. The peri-articular tissues are often the seat of sero-purulent infiltration, or of circumscribed abscesses, which are also found in the muscles of the limb, and sometimes with very extensive disorganisation of the parts.

Having thus pointed out the general morbid anatomy of the disease, Mr. Coulson proceeded to show that, *when it occurs in puerperal females*, it has generally been confounded, by accoucheurs, with puerperal fever, or described as a distinct complaint. This is an error. Puerperal woman are often attacked by purulent inflammation of the joints, without any of the symptoms which really indicate puerperal fever; but the constitutional symptoms of the purulent infection on which the articular disease depends, have been mistaken for those of anomalous puerperal fever, which they resemble to a certain degree. On the other hand, puerperal fever, as is well known, is frequently complicated with purulent inflammation of the veins of the uterus, pelvis, &c., and in such cases there may be secondary articular disease, excited, not by the fever, but by the inflammatory condition of the venous tissues which accompanies it as a complication. Here there is

purulent infection of the blood superadded to puerperal fever; the disease is a complicated one, the symptoms peculiar to each element become masked, and they may be readily confounded. Yet, by remembering the course and symptoms of uncomplicated purulent infection, we generally arrive at the truth. That purulent inflammation of the joints does not essentially depend on puerperal fever, but on some other condition, is shown by the fact that it occurs after abortion, in the early months of pregnancy, when improper means have been employed to evacuate the uterus, and when nothing resembling puerperal fever occurs. Here, there are all the essential symptoms of purulent infection followed by articular disease; and, although these unfortunate cases, from obvious reasons, are seldom investigated after death, yet the symptoms during life leave no doubt of their identity with purulent infection of the blood. Having noticed the peculiar symptoms which distinguish this form of purulent inflammation of the joints, the author insists on the necessity of not confining our *post mortem* examination to the affected joint, but extending it to other parts of the body. The true nature of the disease is then revealed, for circumscribed abscesses or purulent infiltrations are almost always found in the lungs, liver, kidneys, or brain, in the heart, in the cellular tissue or muscles, in the uterus or some of its appendages, and, finally, in the minute veins of the spongy tissue of the bones. It should also be taken into account, that this and other forms of secondary purulent inflammation of joints occur under circumstances quite different from those attending other forms of articular disease. General states of the constitution, such as those arising from gout, rheumatism, syphilis, scrofula, &c., have no influence here; nor can it be traced to any of the immediate causes of ordinary synovial inflammation, as external violence, cold, moisture, &c. It often attacks the healthiest individuals in the prime of life, after amputation of a limb, for example. Unlike other articular diseases of constitutional origin, it is never chronic, but always of a most acute character; and when connected with the puerperal state, it may appear to be epidemic.

In describing the *symptoms*, Mr. Coulson alluded to the shiverings which are one of the earliest symptoms of the disease. These are so severe, and recur in such a manner from day to day as successive depositions of pus take place, that experienced practitioners have mistaken the disease for intermittent fever. The rigors continue sometimes for half-an-hour, and are followed by slight perspiration; they may recur at determined intervals, but generally cease on the second or third day; after which they appear at very uncertain periods, or are noticed no longer. The fever also may be mistaken for typhoid fever; but, as the author observes, no medical man accustomed to watch the slow development and gradual progress of true typhoid fever, could be deceived by the points of resemblance. In a great number of cases the respiratory organs are involved; the breathing becomes irregular and accelerated in paroxysms; there is a dry hacking cough, with

subcrepitating rale; and, in some few cases, with the exhalation of a purulent odour from the breath. These paroxysms of oppressed and hurried breathing, with short, dry cough, are extremely characteristic; they are very often preceded at each return by rigors; and the author considers them as indicative of successive depositions of pus in the substance of the lungs. It is easy to understand that the symptoms may be modified, according to the peculiar circumstances under which the disease may have been developed in the first instance. It may arise, for example, after injuries of the brain, when the early symptoms will be complicated with, and masked by, those of cerebral irritation, or of actual inflammation of the meninges. In cases of this kind, the secondary deposit often occupies the substance of the liver to a great extent, and, if the cerebral symptoms be absent or slight, the disease may be mistaken for an acute affection of the liver. As for the puerperal form, Mr. Coulson drew a distinction which seems important for understanding the true nature of the disease. In many cases it appears as a complication of puerperal fever, especially in that form depending on uterine phlebitis, and then all the early symptoms are masked by those of the puerperal fever, from which it is almost impossible to separate them. But, in other cases, although the woman has been recently delivered, she does not present the ordinary symptoms of the fever just mentioned; she appears to be doing well for several days; there is no tenderness or tumefaction about the lower part of the belly; but after a few paroxysms of shivering, with anxiety of countenance and acceleration of the pulse, the joints suddenly become painful, the tongue gets dry, and the symptoms of purulent infection follow the course already described. In this uncomplicated state, the disease receives no peculiar stamp from the puerperal state, but presents exactly the same symptoms and runs the same course as it does when affecting males, after injuries to, or operations on, the genito-urinary organs. There is, however, this difference in the results, that the disease is of a much more fatal character in puerperal females than in males,—a fact admitting of explanation from the circumstance of its being so frequently complicated in the female with puerperal fever; whereas, in the male, it arises from laceration of the urethra, irritation of that canal or of the bladder, and from other injuries which are not in themselves of a dangerous character. Puerperal synovitis in females recently delivered is a very fatal disease. Dr. Merriman, Professor Cruveilhier, and other writers state, that they never saw a patient recover. The author, however, quotes a case of recovery related by Mr. M'Whinnie.

The *nature of the disease* was next discussed; and on this point, Mr. Coulson, after repeating the opinion which he gave many years ago, in his work on Diseases of the Hip-joint, observes: "I would add from further experience, that I now believe the contamination of the blood to depend on the admixture of pus, as such, circulating with the

vital fluid. The pus is not absorbed, but admitted directly into the circulation through some breach of surface." The following reasons may be adduced in support of this view:—In the great majority of cases the formation of pus in some tissue primarily affected can be proved by dissection. A few cases are on record where no trace of pus could be discovered in those tissues supposed to be the primary seat of disease, and hence it has been argued that these cases are sufficient to justify us in removing the disease from purulent infection of the blood. To this it may be answered, that the identity of course, symptoms, and results in various cases, naturally leads to the inference of an identity of immediate causes; and that as our knowledge extends under the influence of more careful and accurate *post-mortem* examinations, numerous cases are now shown to belong to this class of purulent infection; whereas, formerly, they were either inexplicable, or referred to causes from which no natural explanation of their phenomena could be obtained; thus Dr. Marshall Hall was unable to understand why the eye should become inflamed after parturition, and still less why inflammation of the globe should prove rapidly fatal. These points are now satisfactorily explained by showing, that such inflammation of the eye is not peculiar to puerperal females, but that it occurs in other cases of purulent infection. Again, the typhoid symptoms under which many patients sink after amputation, after trephining, &c.; and the abscesses discovered after death in their lungs, livers, &c., did not admit of explanation, until it was shown that suppurative inflammation existed in all these cases in the cancellous structure of the bones. The same remark applies to the few cases in which puerperal disease of the joints existed without any morbid alteration in the structure of the uterine veins. This exemption of the uterine veins has been considered sufficient by accoucheurs to reject the theory of purulent infection; but the surgeon not accustomed to confine his investigations to the uterus alone, would not have remained satisfied unless every other organ in the pelvis and the whole genito-urinary system had been carefully examined. Inflammation of the mammary veins or of those of the rectum is just as capable of exciting purulent infection as inflammation of the vessels of the uterus or its appendages. If these views be correct, it is evident that the treatment of purulent synovitis from infection of the blood becomes a secondary consideration. The surgeon's chief efforts should be directed towards counteracting the poisonous condition of the blood which has given rise to the constitutional disease. The local malady is merely one of the effects of the constitutional one. Various modes of treatment, both general and local, have been tried by the author and by other practitioners, but it is to be regretted that none have been attended with any benefit.—*Med. Times and Gazette, Oct.* 22, 1853, *p.* 436.

## 38.—TREATMENT OF ANCHYLOSIS AND CONTRACTIONS OF KNEE AND HIP-JOINTS BY FORCED RUPTURE.

By Dr. Philip Frank, Manchester.

[In these cases the object of the surgeon is of course to restore the mobility of the joint. To effect this, even in favourable cases, however, no small degree of patience and perseverance are necessary.]

If during the treatment of seemingly favourable cases a tendency to inflammation should become evident, it would be more judicious to surrender the joint to anchylosis in a position best adapted to the use of the extremity.

Passive motion methodically instituted by means of the screw of the apparatus, forms the simple but efficacious proceeding for restoring the mobility of the joint.

At the commencement of the treatment, these movements are attended with considerable pain, which are without exception, more painful when attempted by manual force, the machine having been laid aside.

As soon as the articular surfaces have become accustomed to mutual friction, the movements can be practised at shorter intervals, and be continued longer at a time.

The movements are only painful at the commencement. We have made the same observation when the patient begins to walk without wearing the machine, the first stage only of each daily promenade being attended with discomfort. It is also highly recommendable to institute forced movements of the joint at different intervals under chloroform. We are thus enabled, by producing a freer extent of motion, to rupture new-formed adhesions, thereby accelerating the cure. If the case was one of real anchylosis, and adhesions between the articular surfaces had to be ruptured by the operation, each movement of the joint was attended with more or less loud crepitation.

The roughness of the articular surfaces is smoothed away by the passive motion instituted in and out of the narcosis, and thus the crepitus which it gives rise to gradually ceases to be audible; and in one case where I paid particular attention to this phenomena, the pain attending movement receded, in proportion to the diminution of the crepitus.

During the whole course of the treatment the patient is permitted to walk about as much as he is able. As soon as it is considered judicious, the machine is dispensed with for some hours in the day. He is then directed to practise active motion of the joint. He is also enabled to institute passive motion, supporting himself by the back of a chair, and bending the joint by the weight of his body; as beforementioned, these exercises must be practised with the greatest regularity.

Baths, the cold douche, and galvanic electricity, as well as friction, may be employed, as powerful coadjutors of the treatment.

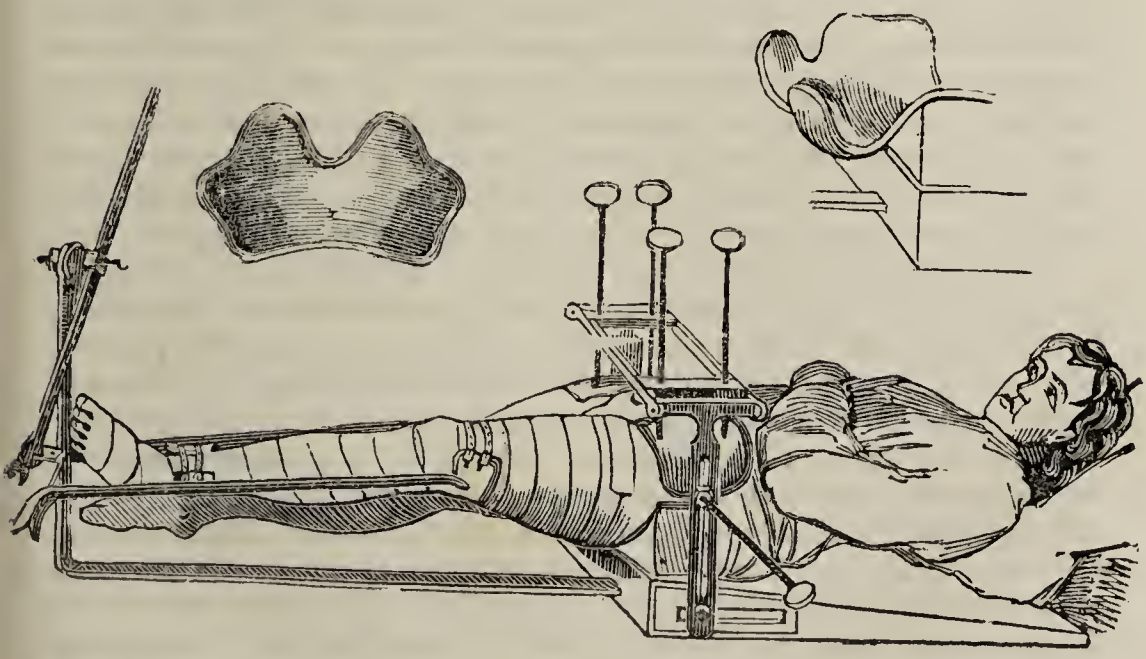
The treatment of contraction and anchylosis of the hip-joint is universally acknowledged to be one of the most difficult and laborious tasks imposed on the surgeon. In former times, when the pathology of the disease was obscure, and the idea of spontaneous luxation of the femur was constantly haunting the minds of practitioners, in cases where most generally but simple contraction or anchylosis existed, either no treatment at all was attempted, or the methods employed were as irrational as they were inefficacious. The pure orthopœdists of modern times can only boast of success in cases of simple contraction without anchylosis.

Dieffenbach would have been undoubtedly more successful if his orthopœdic treatment had been more judicious. M. Langenbeck and M. Buhring have succeeded by means of forced rupture and an orthopœdic after-treatment, as ingeniously contrived as it was judiciously regulated, in obtaining results which the most sanguine could not have hoped to surpass.

In M. Langenbeck's Clinic we have only had occasion to observe cases where the femur stood in flexion, adduction, and rotation inwards. The difficulty of fixing the pelvis, the rigidity of the powerful flexor and adductor muscles of the femur,—the extension of which even in the most profound narcosis, can only be effected by considerable force,—form great impediments to the practice of forced rupture of the anchylosis; in addition to which, great caution is necessary, to avoid fracturing the neck of the femur so often in a state of carious disease. But, in cases of firm, osseous anchylosis, if it should be found impracticable to obtain the melioration of a highly abnormal position of the femur by any other means, we are not inclined to regard this advantage as too dearly bought, even by a fracture of the neck of the femur. This deduction is not only based on theoretical views, the nature of which is obvious, but on unequivocal practical evidence. We particularly refer to the highly interesting case described by Buhring, where the patient, dying of typhus two months after the forced rupture of the anchylosis, (the femur had stood in a high degree of flexion, adduction, and rotation inwards,) the *post-mortem* examination discovered the head of the femur united by osseous anchylosis to the acetabulum. The neck had been broken by the operation, and was entirely absorbed; but the upper end of the shaft of the femur formed a false articulation with the anchylosed head. The patient had been able to walk perfectly well, motion to the extent of forty degrees being practicable. We do not doubt that every one would prefer a simple subcutaneous fracture of this kind to the dangerous practice of sawing through the neck of the femur, as proposed by Rheabarton, from which, even if successful, no better result could be expected.

We will now proceed to describe the method of treating contractions with anchylosis of the hip-joint, the femur standing in flexion and adduction, as we have seen it practised by Langenbeck. Forced

extension, flexion, and adduction are practised under chloroform, the pelvis having been first firmly fixed by several assistants. The patient is then placed in the wire-frame of Bonnet, in order to maintain the normal position of the pelvis, and the degree of extension and adduction of the femur obtained by the extension. The patient is seldom able to remain long after the operation in the apparatus of Bonnet, particularly not, if any degree of extension is practised by the screws at the inferior end; generally the patient has to be taken out of the apparatus. The flexors and adductor muscles then re-contract, and the pelvis on the affected side again rises upwards. The best practice which can then be adopted is to fix the pelvis on a mattress by means of towels fastened to the bed, and then to keep the healthy leg extended. This position is attended with no discomfort to the patient, and is highly effectual in maintaining the normal position of the pelvis. As soon as the irritable sensibility of the joint has subsided, the apparatus of Bonnet can be again had recourse to; and if all adhesions were ruptured by the first operation, perfect extension can be attained by its instrumentality. In nearly all cases, a repetition of the forced rupture will be found necessary. The apparatus of Bonnet will, as before mentioned, generally suffice to attain the perfect extension of the femur. But it will be found insufficient to remedy the adduction, which is always the most difficult to overcome, as well as to maintain the fixed position of the pelvis. It was, therefore, necessary to devise an apparatus to supply these defects,—an apparatus which could effect and at the same time maintain the abduction as well as the exten-



sion of the femur, and also, by perfectly fixing the pelvis, to allow of active and passive motion of the joint being freely and effectually executed. The machine, constructed according to the directions of

M. Langenbeck, has, by fulfilling both these indications, rendered invaluable services towards restoring the normal functions of the joint after forced rupture. The construction is as follows. The pelvis rests with its inferior surface on a padded plate of sheet iron, moulded exactly to its form, after a model of plaster of Paris. This plate reaches on both sides up to the inferior margin of the large trochanter. Two concave beak-like processes stretch forwards and upwards from its anterior margin, to support the tubera ischii. This contrivance is fastened to a strong wooden board, which, at about three inches high in front, forms an oblique plane towards the head of the bed. The pelvis is fixed on this apparatus by means of two pellottes, made of sheet iron, and well padded. These embrace the superior and external part of the ossa ilii, and must be moulded according to a model of plaster of Paris or gutta percha. These pellottes are pressed against the pelvis above and on both sides, by screws sustained by an iron bridge, extending across the pelvis. An iron bar runs from the wooden framework to the foot of the bed, and is here bent at right angles. By the means of an iron lever attached to its upper extremity, the limb can be maintained in any position, and moved in any direction required.

That degree of pressure necessary to render the pelvis motionless is not tolerated by the patients without their being previously narcotised; but a moderate degree of pressure suffices to fix the pelvis so firmly that motion of the limb can be induced to a considerable extent without any dislocation of the pelvis ensuing. The patients can then pass three or four hours a-day in the machine without any discomfort, the limb remaining extended and abducted a part of this time, the remainder being occupied by passive and active motion. The patients are then allowed to get up and walk about as long as the strength of the limb permits; besides this, they lie several hours a-day, sometimes during the night, in the apparatus of Bonnet. Once a fortnight the patient is narcotised by chloroform, and the pelvis having been perfectly fixed in the machine above described, forced flexion, extension and abduction, are instituted. M. Langenbeck has thus succeeded, in a great number of cases, not only in restoring the straight position of the limb, but also the normal functions of the joint. In one case it was necessary to divide the adductor longus muscle, as it obstinately resisted extension. The adductor muscles of the femur generally oppose a great resistance to extension under the influence of chloroform. M. Langenbeck relates a case where the adductor longus muscle snapped asunder on forced abduction being instituted. In the after part, two cases of contraction and anchylosis of the hip-joint are related, one of which we have selected on that account, because the limb had been subjected, during a course of ten months, in a celebrated orthopœdic institution, without the least result being obtained. It was undoubtedly a case of true osseous anchylosis, and is now perfectly cured. Such a case is most adapted to testify to the superiority of

M. Langenbeck's method. It would be well if the pure orthopœdists would deign to take a lesson from it.

The following cases are selected from a great number at my disposal, and I hope that they may serve to illustrate the method employed, and the results to be expected therefrom:—

July, 1848. ——, wool-merchant in Glasgow, was attacked, a week after a gonorrhœic infection, by an inflammation of the knee-joint, which confined him to his bed during the space of four months, in consequence of which a contraction and spurious anchylosis intervened, so that the joint remained motionless at an angle of 140 degrees. In February, 1849, an apparatus was employed with the intent to produce gradual extension of the joint, but violent pains of the joint supervening, the attempt had to be relinquished. After this, repeated relapses of the inflammation took place, the limb became atrophic and so weak that the patient was unable to walk half an hour at a time without pain and fatigue. After using the warm-baths of Wiesbaden without any advantage, the patient came to Berlin and put himself under the treatment of M. Langenbeck. The knee was bent at an angle of 140 degrees; the tibia stood at abduction and rotation outwards; the patella was firmly anchylosed in fossa inter-condylica, near condylus externus; it was impossible to produce the least degree of motion in the joint, which was painful on pressure. On the 23rd of April, 1850, forced extension was practised, and after the rupture of seemingly strong fibrous adhesions, the limb was perfectly straightened; the patella, which had resumed its normal position, was now quite moveable, scarcely any reaction followed the operation, and the apparatus of Stromeyer was easily tolerated. A month afterwards, forced extension and flexion was again repeated. During the narcosis, free motion was practised in every direction. Out of the narcosis, flexion could be practised but to a small extent by the apparatus, without producing pain. The limb was quite straight, and the patient wearing the machine could walk with the greatest ease and facility. In the summer he used the warm baths of Teplitz; in the autumn, the patient returned to the care of M. Langenbeck. Forced movements were repeatedly practised in the narcosis, and the exercise by means of the machine was practised daily with undeviating perseverance. The motion of the joint was thus rendered progressively freer, and after the application of several moxas, free from pain. In November, the patient could walk perfectly well without the machine, and could also practice slight active motion of the joint. The muscular power of the limb gradually increased, so that, at the commencement of the year 1851, the patient could dance with ease and grace—an exercise which he continued to practice through the rest of the winter. In May he returned, perfectly cured, to England. A short time ago, I learned, on inquiry, that the patient still enjoys the perfect use of the limb.

*Case* 2.—Christian Rostock was attacked by an inflammation of the knee, during which, under violent pain, extending as far as the

inferior half of the femur, a rectangular contraction of the joint was established. A great quantity of matter was discharged from an incision made just above the internal condyle of the femur; the opening assumed a fistulous nature, and small pieces of bone were frequently mixed with the secretion. On the 16th of June, 1852, the patient was admitted into the hospital; the right knee was bent at right angles; further extension was impossible; a slight degree of flexion, accompanied by crepitation, was practicable. The tibia was dislocated on to the external condyle of the femur, and slightly moveable; the condyles of the femur were enlarged, and painful on pressure. A probe introduced through a fistulous ulceration just above the internal condyle, came in contact with the rough bone. Forced extension during the narcosis having been practised twice, the knee was rendered perfectly straight. The re-action was inconsiderable; on account of the subluxation of the tibia backwards, the machine of Bonnet was employed, and the reposition nearly perfectly effected; the fistula above the internal condyle of the femur was altogether closed a month and a-half after the operation. When the patient was dismissed, on the 23rd of September, passive motion could be practised by the means of the machine of Stromeyer to any extent without pain; and the patient, who, on being admitted to the hospital, was not able to move without the aid of two crutches, could now, wearing the apparatus, walk for any length of time with the greatest ease and facility. He continued to practise the exercises at home with the greatest perseverance, and, on presenting himself in the Clinic, in February, 1853, he affirmed that he was able to make long tours without the machine, the normal functions of the joint being nearly perfectly restored.—*Medical Times and Gazette, Nov.* 5, 1853, *p.* 473.

## 89.—ON THE EXCISION OF JOINTS.

"The excision of joints forms one of these magnificent improvements in the practice of surgery by which the bold men of the last century have made themselves and their profession illustrious, and by which they have contributed so much to the public weal, thereby preserving the means of prehension and progression to those who, had they lived in former times, would have been either unnecessarily deprived of those members with which a man labours for his bread, or left to linger hopelessly until death should relieve them of their sufferings."

These exulting remarks, from the pen of Mr. Weeden Cooke, are appended to a case of excision of the ankle-joint performed by Mr. Thomas Wakley, at the Royal Free Hospital in 1847; and well might Mr. Cooke rejoice at the immense benefit bestowed on suffering humanity by the new, improved, and humane practice of excision of joints, for this benefit has, since that period, been considerably increased, and has spread its cheering influence through the length

and breadth of the land. The particular case to which Mr. Cooke alludes, and, in which the astragalus and os calcis were removed, is well calculated to inspire confidence in the practice referred to, as Mr. Wakley's patient has been watched through the course of years and found to have recovered the almost perfect power of locomotion. Mr. Wakley gave an opportunity to the fellows of the Medical Society of London of appreciating the results of the important surgical operation which the patient had undergone, and the latter convinced all present by walking up and down, and by exhibiting the firm cicatrices about the foot, that the amount of bony substance which may with permanent benefit be excised from the tarsus was not conjectured before Mr. Wakley's operation.

Among the benefits of conservative surgery we would certainly include the practice, very generally adopted in our times, of diligently searching after dead bone in disease of the elbow, ankle, or shoulder. We have seen very large portions of necrosed bone removed from these joints—so large, indeed, as to allow the proceeding to be ranked among the resections of a portion of the articulation. Often, indeed, have we seen patients placed on the table, and the operation for removal of dead bone undertaken, when the ankle, elbow, or knee looked as if no course was left but amputation. The gouge, however, generally succeeded in dislodging a large piece of carious or necrosed bone, by which measure healthy action was excited, and the joint eventually restored to efficiency. It is particularly about the os calcis, the astragalus, and the cuboid bone, that such operations are frequently demanded; and not longer back than the 22nd ultimo, we saw Mr. Cock, at Guy's Hospital, remove a considerable quantity of carious bone from these localities, in a boy whose foot presented all the symptoms of caries of the tarsus in an aggravated degree. The little patient has done remarkably well; the foot is now in a very favourable condition.

There are two joints, however, the excision of which has given rise to animated controversies—viz., excision of the head of the femur, and resection of the whole knee-joint. As to the first operation, it now proved, by Mr. Fergusson's cases, that it is not only justifiable in appropriate instances, but highly beneficial, as life has been saved and the motions of the hip preserved. Of course, all cases of hip-joint disease are not adapted for the operation, and we have ourselves seen an attempt to remove the head of the femur when this process was completely absorbed; but a careful investigation of the case in hand will pretty constantly suffice to teach the surgeon whether he should venture upon this resection or not.

Hardly less dispute has been excited by resection of the knee-joint, and as some cases ended fatally, a certain amount of odium has been cast upon the operation. But it should be remembered that Mr. Fergusson's patient, whose case was reported in this journal (see *Retrospect*, vol. xxvii, p. 132), is now in a fair way of complete recovery.

and that the cases which Mr. Jones, of Jersey, brought before the Medical Society of London when the patients were presented to the fellows, are well calculated to bring the operation into favour.

There is another joint the excision of which has very recently been attempted in two hospitals of this metropolis—viz., the wrist; but here the results have, as far as we know, been less favourable than was expected; and yet it does not appear very clearly why the principle which applies to the elbow and ankle should not hold when the carpus is concerned. However this may be, it will be seen, that the results attending the excision of the wrist-joint are not encouraging.

The most marked success in excision of joints, wholly or partially, has been obtained about the elbow and the foot; as to the latter, we have already alluded to Mr. Wakley's operation, and would add that we frequently see in the theatres of our hospitals, either a portion of or the whole os calcis removed with the best effect. Other bones of the foot are occasionally excised, the cuboid, for instance, of which operation Mr. Coulson has given a very interesting instance in a paper read before the Medical Society of London. ('Lancet,' vol. i. p. 121, 1851). Mr. Coulson has had several opportunities of repeating these operations, but with varied success, some patients being permanently benefited, and others obliged eventually to submit to amputation of the leg. As regards extreme measures we would just state, that we have known a patient upon whom Chopart's operation was first performed, and who had finally his thigh taken off, as removal of diseased portions of the limb at different periods, from below upwards, did not arrest the progress of the strumous tendency.—*Lancet, January* 14, 1854, *p.* 31.

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## 90.—CASES OF EXCISION OF THE HEAD OF THE FEMUR.

[The patient in the first case, a boy of 8 years old, was admitted into St. Bartholomew's Hospital, under the care of Mr. Stanley, in June, 1852. He had suffered from diseased hip for several years. Abscesses had formed and burst, and the joint was surrounded by fistulous openings. The head of the bone was also dislodged from its normal position.]

The patient was brought into the operating theatre July 22nd, 1852, and Mr. Stanley then stated that he considered himself fully justified in excising the head of the femur, if that process, when fairly brought into view, were found carious. Mr. Stanley stated, before operating, that he would raise a flap over the head of the bone, and be guided by the state in which he found the part. If in a carious state, he intended to remove it; if not, the patient would experience no prejudice from the operation, which, on the contrary, on the principle of the benefit to be derived from free incisions into joints, would

be likely to produce some advantage in letting out the matter, and freely opening the articulation. The child's life, which was evidently in danger, might even thus be saved.

After the patient had been narcotized by chloroform, Mr. Stanley made a semi-circular incision over the head of the bone, and raised the flap. It was now found that the greater depth of the principal abscess was situated behind the neck of the bone, the amount of suppuration being very considerable. The head of the femur was then separated from the shaft by means of the saw and the cutting forceps very cautiously used, the latter instrument dividing the parts without effort, as the osseous texture had become very soft. The head of the femur was found completely decayed, carious, and disorganized, evidently not admitting of any reparative action; it was exactly as if necrosed, for the suppuration had penetrated the cancelli of the bone. No vessels required any ligature, and Mr. Stanley expressed his opinion that, by the above-described excision, the life of the patient, which must evidently soon have given way, was very likely to be saved. The parts were neatly brought in apposition, and for some time after the operation the little patient was desired to lie on his chest, in which position it was found that the limb lay quite straight, being retained *in situ* by a splint well padded with cotton wool in the vicinity of the hip.

The boy had, previous to the operation been given good diet, cod-liver oil, tonics, &c.; these were continued after the excision, and the patient progressed very favourably for the first few weeks, the wound granulating very energetically, and the general health improving visibly. It is interesting to notice how different, and how very far from exhausting, is the purulent discharge from a clean wound, unirritated by carious bone, as compared with matter profusely poured out from sinuses and fistulæ kept up by disorganizing osseous tissue. After a few months' of careful treatment, good diet, and appropriate medicine, the patient was able to get up and go about the ward on crutches; the old fistulous apertures healed up, and no open wound was left but the remains of the incisions made for the removal of the head of the bone. The progress after the first six months was, however, very slow, and a small portion of the wound was extremely tedious in healing, although some amount of motion was regained in the hip. The boy was, at the same time gaining flesh, and after he had remained just twelve months in the hospital, Mr. Stanley thought, in the summer of 1853, that the change to the sea-side would contribute to the child's final recovery. The latter was therefore sent to Margate just one year after the operation, some discharge remaining about the unclosed wound of the hip.

The patient's general health gained remarkably by the removal from the hospital to the bracing air of the coast. He remained at Margate for the summer months, and then returned to his parents; and we learn by the last accounts of him that he has grown strong, but that the

parts about the hip are not as yet completely cicatrized. It will be clearly seen by this case that no final and satisfactory results should be expected after the resection of some of the larger joints, before at least one year or eighteen months.

[The patient in the following case, admitted into University College Hospital, under Mr. Erichsen, Oct. 31st, 1853, was also a boy aged 14. Eight years and a half before admission he was pushed down a flight of steps, and has been lame since, but until two months before admission had never felt any pain in the hip; at that time an abscess formed and burst. The limb was found three inches shorter than its fellow, and all the other symptoms were those of extended mischief in the hip-joint His appetite was bad and he perspired profusely at night, but there wss no disease of the lungs.]

The boy was ordered good diet, and the following medicines: syrup of iodide of iron, one drachm; iodide of potassium, two grains; infusion of quassia, one ounce; to be taken three times a day; also two drachms of cod-liver oil, twice a day. Topically, a linseed-meal poultice was applied to the ulcerated portion of the thigh.

[The state of the patient's health was much improved at the end of the week, and on more complete examination it was found that the head of the bone was dislocated on the dorsum of the ilium.]

About ten days after this examination, Mr. Erichsen passed a long probe through the highest and largest termination of the fistulous tracts, whilst the boy was under the influence of chloroform. The instrument went to the outer side of the prominence supposed to be formed by the trochanter; a narrow bistoury was then glided down to it through the integuments and soft parts, directly over the extremity of the protuberance. The probe was then passed into the new opening, through which no pus escaped; it came in contact with a hard surface resembling bone, and covered with dense tissue and plastic matter, but no exposed bone could be felt.

A little feverishness followed this examination, but the unpleasant symptoms were removed by appropriate remedies, and on the 23rd of November Mr. Erichsen proceeded to operate.

The boy was narcotized by chloroform, and the affected thigh being carried over the opposite limb, Mr. Erichsen made a T-shaped incision over the outer part of the trochanteric prominence, and the bone was laid bare by a little dissection. The head of the femur was then turned out of its bed by carrying the limb still more across the abdomen, and using it as a lever. When the exposed bony process had been well freed from soft parts, a section of it was made with a saw. The piece of bone being removed, a cavity containing pus and several pieces of detached bone, was observed in the neighbourhood of the acetabulum, which latter cavity was partly filled up with plastic matter, but presented a small, slightly rough substance at one point.

The latter was scraped with the gouge, and a few bleeding vessels having been tied, a piece of wet lint was placed carefully at the bottom of the wound to arrest the rather free oozing; the whole solution of continuity was then covered with thick large water-dressing, a pillow placed under the leg and the boy removed to bed. The limb was soon afterwards fixed to the long splint, with two iron brackets substituted for the wood in the situation of the wound.

The inflammatory fever ran somewhat high, and the boy complained of much pain for the first few days. The discharge was at the outset thin, but soon became laudable, though now and then a little fetid, and cod-liver oil with occasional anodynes were now given at night.

The patient one week after the operation, was attacked with severe pain in the elbows, which shifted afterwards to the knee, ankle, and toe on the right side. The progress was, however, favourable; but on the ninth day the right knee was extremely painful, and on examination found much swollen. This, however went off in a few days, and on the nineteenth day the patient was found gradually improving in health; he had certainly gained flesh since the operation, was free from pain and moved easily in bed. The wounds made for the removal of the head of the bone were almost healed, and the discharge came principally from a sinus in its vicinity.

At the present time, about two months after the operation, the boy is still in the hospital; the wounds made by the knife are healed, but the sinuses keep discharging a small quantity of pus. Here it may be said that the patient's life was at a very low ebb, and that the operation has been instrumental in saving him from his impending fate.—*Lancet, Jan.* 21, 1854, *p.* 62.

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## 91.—ON EXCISION OF THE KNEE-JOINT.

By G. M. Jones, Esq., Surgeon to the Jersey Hospital.

[This formidable operation was for a long time strongly opposed, and it is only very recently that advocates could be found for it. It has, however, been sanctioned by Park, Crampton, Moreau, and Syme, and lately Mr. Fergusson seems fairly to have taken it in hand, and no doubt will test its value to the very utmost. In our last volume (pp. 187—197) will be found several papers on this operation, with cases by Mr. Fergusson, Dr. Mackenzie, Mr. Jones, and others.]

The limb grows after the excision of the articulating surfaces, as is proved by three of the author's cases, children under ten years of age. This statement is confirmed by the history of Mr. Page's case. The operation is performed as follows:—A lateral incision along each side of the joint, and a transverse one immediately over the centre of

the patella; the flaps then dissected upwards and downwards, and the patella removed; the joint ends exposed, and so much of the femur and tibia removed as was found in a disorganized state, the bones being thus placed in juxta-position, and secured in a suitable box. Mr. Mackenzie, of Edinburgh, suggested the preservation of the patella, that bone being held to one side by a flat and turned up spatula over the inner condyle, and to this improvement the author gives his assent. It was soon, however, allowed to fall into disuse; for from the time of Mr. Filkin's operation until 1850, a period of eighty-eight years, but twelve cases are on record. In this year, however (1850,) it was revived by Mr. Fergusson. A table of thirty-three cases was presented for the consideration of the Society, showing that death had followed the performance of the operation in eight cases only. The greater success attending Mr. Jones's cases was due to the healthy situation and the airy wards of an hospital situated away from buildings near to the sea-shore. He also relies upon stimulating treatment *immediately* after the operation. The objections to the performance of the operation are twofold—first, its severity, the shock to the constitution, hemorrhage, &c.; secondly, we are told that union does not always take place. To these the author replies that the operation has now been done many times successfully, and that the limb has proved more serviceable than the most perfect artificial support that could be manufactured. He relates a case in which, after the performance of excision of the knee-joint, disease commenced in the opposite hip. Upon recovery, the patient found the limb, which had been subjected to operation, become the stronger and the more useful. The operation must not be performed indiscriminately in all cases. It is not fit for those commonly called "white swelling," and it should not be delayed until the strength has been too much reduced.

[Mr. Fergusson said it was proved that almost as much success had attended this operation as that of amputation of the thigh. He observed:]

Resection of the knee-joint was an older operation than that of the elbow, and also as successful. It was remarkable that this proceeding should have remained in abeyance for so long a period, until he revived it, seeing that three out of the six cases operated upon in the early part of the present century had been successful. His own conviction was, that it was a proceeding as justifiable as amputation of the thigh, and far more beneficial, inasmuch as it saved the limb. Perhaps it was too much to say that this operation would supersede amputation in all cases of disease, even of the elbow-joint; but in answer to the objection, that resection was performed only in selected cases, it might be stated that in the first case operated upon by Mr. Park, it was regarded as unfavourable either for amputation or resection, yet the patient did well. It had been sufficiently proved that the limb did grow after resection had been performed.—*Lancet, April* 22, *p.* 445.

[At a meeting of the Medical Society, November 19th, 1853, Mr. Smith presented two patients of Mr. Jones's to the notice of the society, who had recovered from the operation of excision of the knee-joint.]

One of them, a young man of twenty, walked up the room without any artificial appliance whatever, and was able to use his limb very extensively, it being perfectly straight, and only half an inch shorter than its fellow, so that it is not necessary for him to wear a high-heeled boot. The knee is anchylosed, there being hardly any movement. The man is in perfect health, and stated that he had walked as far as six miles together, and is now enabled to carry on his occupation, which is that of a house-painter. The other was a boy, aged twelve, on whom the operation of excision had been performed seven months only. The limb was quite straight as in the other, and there was perfect bony anchylosis at the knee. In this instance, however, the patella had been left so that the boy had full power of lifting the limb, inasmuch as the attachment of the great extensor tendon was left. It was noticed that this little boy walked up the room with the aid of two sticks. This was explained by the existence of a circumstance which rendered the case very interesting. This was a dislocation of the hip of the opposite side, which had occurred spontaneously from disease some few weeks after the operation. Fortunately, however, the disease in the hip had become arrested, and the patient, although he ordinarily used two sticks, was enabled to walk, resting upon the arm of another person. He was daily getting strength, and doubtless in time would be able to progress with facility. If, however, amputation of the thigh had been done, and he used a wooden leg, the dislocation of the hip on the other side would have prevented progression; the superiority, therefore, of excision of the knee-joint was doubly shown in this example.

Mr. Jones had operated in six cases; in five of these the operation was successful The sixth would have been equally satisfactory, but the patient, a lady, died ten days after the operation, of dysentery, which was then prevalent. One of the patients he had operated upon could run well up a ladder, and another play at foot-ball. He had brought the two patients, just exhibited, up to London to seek the opinion of the more experienced surgeons here, with a view to determine whether the operation were a legitimate one, or should be abandoned.—*Lancet, Nov.* 26, 1853, *p.* 502. ·

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## 92.—CASES OF EXCISION OF THE KNEE-JOINT.

By Dr. W. Keith, Aberdeen.

[The following interesting case was discharged cured by Dr. Keith.]

John Hay, aged 9, from Old Aberdeen, of small stature, and delicate look, but of a happy and cheerful disposition, was admitted

on the 7th of Nov. 1853, into the Royal Infirmary, Aberdeen, with scrofulous disease of the right knee-joint, which has existed, better and worse, for twelve months. The leg is fixedly bent on the thigh at an acute angle, the heel almost touching the nates. The knee-joint is much enlarged generally; the head of the tibit and condyles of the femur evidently expanded; the capsule of the joint is distended and feels pulpy. There is tenderness on pressure on every part of the joint, and actual pain on any attempt being made at movement or extension. The diseased limb, owing to wasting, looks, as a whole, diminutive beside its fellow. His general health is good, though he is reported to have had occasional attacks of diarrhœa within the past three months. His spirit is buoyant, and he earnestly desires to save his limb.

Nov. 22. It was agreed on consultation that excision of the joint should be practised in his case.

On Saturday, 26th Nov., at 10.30 A.M. Under chloroform. An incision was made from the inner to the outer condyle of the femur, in a semicircular line, the point of the flap reaching to the head of the tibia, the ligimentum patellæ being there cut through. The flap, including the patella, was dissected from all its connections, to a line fairly above the condyles; the lateral and crucial ligaments were cut, when the utmost facility presented for sawing off the condyles of the femur. The articulating surface of the tibia was then sawn off from behind forwards, the line of section not reaching so low as the fibula, two inches in whole being the exact measure of the two portions of bone removed at the operation. The face of the patella was implicated so far as to have become partially adherent to the trochlea of the femur, and was to some extent denuded of cartilage, it was therefore smoothed by the removal of a thin slice by the aid of a farrier's paring knife; the remaining portion of the patella being evidently healthy was allowed to rest in situ. Two small arteries only required ligature. Indeed the operation might be designated as bloodless, so little hemorrhage having occurred. The wound was closed by six stitches, dressed with ointment, compresses and bandage, and the limb extended to the straight without any difficulty—laid and secured in a well-fitting Macintyre's metal fracture frame. The whole proceeding may have occupied five minutes. He was put to bed still under the influence of chloroform. To have eight drops of laudanum as soon as he wakes.

7 o'clock P.M. Has slept quietly and with little interruption since the operation; says the limb is quite easy; not a drop of blood has oozed from the wound. Has taken soup in small quantities, but feels squeamish, probably from the effects of the chloroform.

[On Monday, 10th Feb. (76th day) the wound was firmly cicatrized, and the joint stiffened firmly by anchylosis, and on the 82nd day he was daily going about.]

*Remarks.*—The mode of operating was that recommended and practised by Mr. Richard J. Mackenzie of Edinburgh, the simplest and most efficient that can well be conceived. A semilunar incision extending from condyle to condyle and bisecting the ligamentum patellæ, gives, on dissecting the flap upwards, complete access to the whole joint, and admits of the easiest possible disarticulation, and removal of the diseased portions of bone. No portion of integument was dispensed with, and it is clear never should be. The cicatrix now shows a mere line. The ligament of the patella is united where it was cut as firmly as if never divided. The patella was spared in its seat, and adds by its presence not only to the symmetry of the limb, but also to the solidity of the joint, and to the firmness of those attachments between the thigh and the leg so necessary in progression, and at the same time so needful to preserve the limb straight under the weight which it will in walking have to carry. The patella is seldom if ever primarily or extensively diseased, so that all that can usually be required is to pare a thin slice from its articulating surface, and this is very easily accomplished by the curved paring knife.

In the operation, as a whole, the cut surface exposed was less by one-third than in a flap amputation of the thigh. Bleeding there was none, and shock there was none. Less of either than was ever witnessed by the operator at any amputation he had ever seen. The period on the table is brief as compared with what is occupied in taking up the numerous arteries after amputation for chronic disease of a knee-joint. Two minutes might suffice for completing excision of the knee-joint and closing the wound permanently, but it were hopeless to make any such attempt with amputation; and it is important, on the patient's account, to keep him as short a time as possible on an operation table.

The after condition of John Hay proved the entire absence of shock to the system; no fever followed; his appetite was unimpaired, and any suppuration that occurred was trifling in the extreme.

As to the nature and period of his confinement after the operation, he was able on the sixteenth day to sit up in bed; on the sixty-second day he was allowed to dress and go about on crutches, bearing part of his weight on the right foot; on the eighty-second day he was so firm on his feet, and so sound about the joint, as to be considered no longer under surgical care, a period which any surgeon would gladly accept as a favourable average, if obtainable after amputation of the thigh in a scrofulous subject.

The important question has been asked,—Should the bones be united by anchylosis after excision of the knee-joint, or should any attempt be made to form a moveable or artificial joint?

In confirmed scrofulous disease of the knee-joint, anchylosis, if accomplished with the limb nearly straight, is very justly considered a favourable termination to the case—the very fixing of the joint afford-

ing a security against the recurrence of like disease in the same joint. Considering, then, the kind of constitution that is so likely to exist in the subject requiring excision of the knee, the risk would be great indeed that diseased action would immediately commence were the denuded head of the tibia required to form a socket in which the end of the shaft of the femur was to roll and rotate, and that also while it had to support the superincumbent weight of the whole body in locomotion.

There cannot be a doubt, therefore, that anchylosis must be secured in every instance to ensure safety to the limb, and *solid* comfort to the patient. The femur and tibia being both sawn across, callus readily unites them, and the patella, intentionally denuded of cartilage, occupies a most important, as well as favourable position, for forming a strong connecting link or band between them, whether the union of the three be by perfect osseous intermixture, or partially by fibrous tissue, the limb straight and strong from being stiff, will safely encounter the fatigues of travel, not more, but now less, subject to disease than the opposite limb. In the case just recorded, the bony union is complete, proving that such is practicable; it is comfortable to the patient and useful. It needs no prophet to foretell, that as sure as it is the rule of practice to ensure mobility in the elbow after excision of that joint, so sure will the rule be to secure immobility after excision of the knee-joint.—*Monthly Journal of Medical Science, April*, 1854, *p.* 329.

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93.—*Case of Incision into the Knee-joint.* By Robt. B. Jordison, Esq., South Ockendon.—[The following case shows the extent to which injury of this large joint may be carried, with ultimate safety, and even without anchylosis.]—George G., aged 20 years, an agricultural labourer, of strumous habit, whilst in the act of mowing, came in contact with the scythe of his fellow-labourer. Immediately after the accident, he was conveyed in a cart to my surgery, when, on examination, I found an incised wound of about five inches in length, extending transversely across the anterior part of the thigh immediately above the superior edge of the patella. The hemorrhage, which had been considerable, had in a great measure subsided. On introducing my finger into the wound to ascertain its course, I could readily pass it into the cavity of the joint, the aperture into which was to the extent of about an inch. I lost no time in closing the wound, which I did by a number of sutures covering the entire wound with numerous strips of adhesive plaster, and encasing the whole in oil-skin, so as to exclude the air as much as possible. I then placed the leg and thigh upon a long, straight splint, and had him conveyed home. In the course of two hours reaction commenced, and for about six hours he suffered excruciating pain, which I successfully combated with large doses of

opium, combined with small doses of calomel. I allowed the dressings to remain undisturbed for several days, and for a fortnight there was not the least constitutional disturbance, but at the expiration of that time, (he being still under the most rigid antiphlogistic discipline,) the pulse suddenly rose to 135, the tongue became loaded, and the countenance anxious; the knee was very much enlarged, exquisitely tender, and discharged large quantities of synovia. I ordered two dozen leeches to be applied, hot fomentations, and to take calomel and opium every four hours. In the course of a few days the constitutional disturbance gradually subsided, but the size of the knee remained unaltered; the integuments now sloughed to a considerable extent, and the discharge of synovia still continued very profuse. In about ten days more he was attacked with a violent rigor in the night, and the whole train of inflammatory symptoms returned with renewed force, but in the course of five days they gave way, but only again to be renewed at the lapse of a week, and thus the case progressed for upwards of two months, when the wound commenced for the first time to wear a more healthy aspect, and the tenderness to subside, and in fifteen weeks from the infliction of the injury it was cicatrized. The motion of the joint was at first very limited, but as time wore on it obtained greater mobility, and I have now the satisfaction of seeing him industriously employed in his wonted avocation, with his once afflicted knee as strong, as flexible, and of as much service to him as it was prior to the accident.—*Lancet, April* 8, 1854, *p.* 385.

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94.—*Case of Inflamed Bursa of the Patella; Evacuation of the Fluid.* Under Mr. Weeden Cooke, at the Royal Free Hospital.—Mary S., aged 30 years, a servant-of-all-work, presented herself amongst the out-patients, March 10th, 1853, with effusion in the bursæ of both knees; the distension was considerable and painful, and distressed the patient very much, wholly incapacitating her for her usual avocation. She was in good general health, but rather plethoric. Mr. Cooke having introduced the grooved needle, at the same time rotating it, and pressing gently upon the swelling, an ounce and a half of unctuous, synovial-like fluid was obtained from one bursa, by which procedure it was totally emptied. A bandage was applied very lightly, and she expressed herself as being much relieved by the tapping. A blister was ordered to be applied the same evening to the knee, and the patient desired to take a purgative.

A week afterwards, the blister being healed, there remained some thickening of the walls of the bursa, as well as some puffiness of the surrounding tissues.

The next week, being the second after the tapping and blister, the knee was in quite a normal condition, with not the slightest appearance of there having been anything the matter with it.

The other dropsical bursa was the subjected to the same treatment, and progressed equally well. At the end of a month the patient returned to her occupation, with a caution always to use a pad when kneeling.

Mr. Cooke said, on discharging this woman, that these cases are constantly presenting themselves, and always yield to this treatment, if the patients be in tolerable health, as readily as the foregoing: if a strumous or otherwise unhealthy tendency exist, a second tapping and blistering are occasionally required, with the addition of the application of iodine ointment to the blistered surface, and of course, if necessary, constitutional treatment.

[Mr. Cock had a little patient at Guy's Hospital with a similar inflammation, and he evacuated the fluid by making a puncture into the joint. The symptoms after the operation subsided to a surprising degree.]—*Lancet, Dec.* 17, 1853, *p.* 576.

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## 95.—ON AMPUTATION AT THE ANKLE-JOINT.

By Samuel Hadwen, Esq., Surgeon to the Lincoln Hospital.

[Mr. Hadwen has given us several good cases of this description, treated after the method of Mr. Syme, in which he differs in some respects from others who have performed this operation. Of course the removal of the diseased bones and articular surfaces is the one great point to be attended to. The diseased action in the soft parts is generally altered when this is done.]

The thumb and index finger of one hand resting respectively upon each malleolus, the first incision was made by introducing a stout scalpel through the soft parts, down to the bone of the point indicated by the thumb, and carrying it directly across in the course of the flexure of the joint to the other, or that occupied by the finger; the direction of the knife was then altered, and made to pass from the centre of the last point, the malleolus, through the sole, with a little inclination backwards, up to the centre of the opposite malleolus; terminating, in fact, at the point of commencement. In this manner the external incision was effected by one nearly continuous sweep of the knife. The most admirable feature in this operation is the conversion of the sole of the heel into a flap to become the future covering of the bony stump. Thus a part, naturally endowed with properties purposely designed to bear the superimposed weight of the body and to resist compression, is again made to fulfil, after the removal of disease, its appropriate purpose in the economy. It is, consequently, of some importance in dissecting back the flap, to keep the nail of the thumb and the knife directly in the rear, close up against the bone of the heel, so as to preserve not only the skin, but the whole of the fibrous and fatty granular structure of the sole, thereby securing the

whole of this beautiful and elastic cushion of support. Not only will this point be secured, but that which at the best is a tedious bit of dissection, will be much facilitated; and, what is more, incisions through the skin, or "button-holes," as they have been called, avoided. There is no difficulty in this dissection which ordinary care and a steady hand does not readily surmount. The difficulty has been exaggerated. When the surgeon is about to perform this operation for the first time upon the living subject, he will do well, if he have the opportunity, to practise it previously upon the dead. An excuse has been made for the "buttonholes." They are pardonable only because of very little consequence; and, as neatness in operation is a point always to be admired, it behoves the surgeon to avoid these perforations. "What is worth doing at all, is worth doing well;" and though at the time the patient may be insensible, when chloroform or ether be used, to the pain of these punctures, I am not so sure that the process of healing, even of these small incisions, is accomplished without uneasiness. That these openings through the skin may be useful for the escape of matter, (an alleged but questionable result), is no reason or excuse for a slip or unintended stroke of the knife. If the surgeon would make it a rule throughout this operation to keep his knife close to the bone, he need be under no fear of button-holes. Another, and that a very disastrous circumstance, he will also, by this rule, escape. In dividing the parts behind the internal malleolus, it is of the first importance that he keep his knife free from the posterior tibial artery; and this will best be done by cutting quite behind the flexor-tendons, close to, or even shaving the periosteum. From want of attention to this point, I have seen this vessel completely divided, the operation frustrated, and obliged to be superseded by amputation above the joint, thereby depriving the patient of the benefit of the plantar cushion for a flap; and, disadvantageously, still more curtailing the limb. When the flap has been reflected back, and the great tendon of the heel and the lateral ligaments divided, the disarticulation may be accomplished with ease. From want of attention to this latter circumstance,—the division of the ligaments,—I have seen the disarticulation rendered very embarrassing. The thinner the slice of bone removed by the saw the better. In two or three instances it barely cleared the depth of the pit in the tibia. Chloroform was successfully used in all the cases except the third, in which the patient requested, in consequence of the very disagreeable after effects experienced on two former occasions of its use, that it might be dispensed with. He afterwards assured me the pain of the amputation had been more endurable than the distress, depression, and illness previously experienced from the chloroform.

In one instance I deviated from the course above described, by disarticulating the astragalus before dissecting the flap from the heel, desiring to see whether I could thereby facilitate this object. It forms the only occasion when a button-hole was made by me in these

operations, and rather impeded the performance than otherwise. The hole was of no use. It soon healed; and some matter which afterwards formed required a fresh opening to be made.

As in operative surgery, conservatism, as far as admissible, should be the surgeon's rule, so, in medicative, should simplicity be his guide. In the following cases, after the arteries had been tied, the wound washed, and any diseased structures connected with the parts removed, the flap was adjusted, and retained in position by as many sutures (inserted about an inch apart) as were required. The two first were then dressed in the ordinary way with adhesive straps and bandage; the remainder in the following manner:—Strips of linen, about a foot long and an inch wide, soaked in warm water, were applied to the stump, between the sutures, and extended on each side of the leg three or four inches upwards; a broader and somewhat longer piece was then made to surround the lower part of the leg, so as to secure the ends of the pieces overlapping the flap. A single loose piece of lint or linen cloth, always kept moist with warm water, covered that part of the extremity not in contact with the bed; and a concave sponge, also soaked in warm water, and the latter squeezed out, received the end of the stump. This was made to keep up a gentle pressure by means of a pillow placed behind, and also to preserve the temperature, which was still further insured, and evaporation prevented by a piece of oil-silk laid over all. The patient having obtained an easy position, reclining upon the side of the amputated limb, was enjoined to keep the extremity as much as possible immovable.

I have been thus particular in describing this mode of dressing, because it is far superior, in my opinion, to the old practice of adhesive straps and bandages; keeping up a better regulated pressure; revealing at a glance the state of the stump; allowing discharge an easy escape; lessening mischievous stretching and laceration of tender adhesions when removed and replaced; diminishing pain to the patient and trouble to the dresser by the facility of removal; and requiring, from its greater cleanliness, less frequent renewal. I have now for several years past practised this kind of dressing, with or without the sponge, in all my cases of amputation. The unsuccessful result in the second case caused me to abandon the old plan, and the above-named advantages have confirmed me in the use of this more simple method. A few weeks ago, a double flap amputation of the thigh was healed after only six renewals of this kind of dressing. The sutures, or at least the greater part of them, were removed on the fifth or sixth day; and, in all the cases save the second, rapid union by the first intention (as it is called) of the greater part of the flap ensued.

In four of the five cases admirable stumps were obtained. The first individual, Checkley, recovered with a perfect stump, but was attacked, some months after leaving the hospital, with spitting of blood, and eventually died consumptive. The stump continued sound to the last. In the second case, the whole of the flap sloughed away. Whether

this was owing to any injury of the posterior tibial artery, unobserved during the operation, (not very likely), or whether owing to the diseased state of the integuments, or the low state of the vital powers, (the man was greatly reduced, and the skin in a very diseased condition), or to over pressure from the applications, or to a combination of any of these, I am unable to say. More pressure, by means of the strapping and bandages, was applied than I have ever since deemed it necessary to use; and though I cannot assert that this was the cause, the suspicion that it may have been is strengthened by what I have heard of other cases in which a portion or the whole of the flap mortified. Reasoning, *à priori*, firm pressure would appear to be indispensable for the purpose of keeping the loose, hollow flap in contact with the large cancellous surface of the ends of the bones. It is, I am satisfied, a fallacy to suppose a greater degree of pressure is required either in this or other kinds of amputation than that which may be obtained by the simple method advocated above. Hobson, the subject of the third case, has for nearly four years been able to walk with an artificial substitute, almost as well as he did before the disease of the foot existed. He pursues his employment regularly, and stands for many hours in succession, and gets through his work as well as though he had not lost his foot. Notwithstanding that he has twice had the misfortune to break the thigh-bone on the same side as that on which the amputation was performed, once before and once since that event, and has thereby still further shortened the limb, he walks without a stick, and with a hardly perceptible limp. Hallam and Porter have equally excellent stumps. With an artificial aid, similar to that used by Hobson, they both walk well.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 650.

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96.—*Modification of Syme's Operation at the Ankle-joint; Non-Excision of the Astragalus.* By John Simon, Esq., at Saint Thomas's Hospital.—It is an advantage to leave the astragalus in the amputation of the ankle-joint, supposing that bone to be unaffected by caries. It is alleged, on the one side, that it is of importance to preserve articular movements in the lower part of the leg, so as to increase the usefulness of the shoe, and allow of a kind of natural flexion and extension; whilst others contend that much of the steadiness and firmness afforded by the long lever of the tibia and fibula are lost by preserving the tibio-astragaloid articulation. We do not pretend to strike the scale; but it seems in some degree a pity to take away a perfectly healthy bone, and it may perhaps be maintained (though surgical machinists would be most competent to decide the question) that some degree of movement between the tibia and the shoe might be of advantage. However this may be, we are bound to say that Mr. Simon has had a case of the kind in private practice, where his modification of Syme's operation at the ankle answered

admirably. We find that this first astragalar amputation was performed as far back as May, 1848; and we are inclined to think that this case, with the one that was admitted into St. Thomas's Hospital, are the only instances in which the operation has been performed in this country. The patient was about fifteen years of age, and suffered from scrofulous caries and necrosis, affecting the front and outside of the tarsus, extending even to the os calcis, but sparing the astragalus. It of course required care to verify this. The boy's health was breaking down, and it was judged necessary to remove the source of irritation: but as Mr. Simon had ascertained that the astragalus was not diseased, he resolved to leave that bone. The operation was performed in the same way as is generally adopted for amputation at the ankle-joint, the knife running between the astragalus and os calcis, instead of being worked between the astragalus and the lower extremity of the tibia and fibula. The flap was taken in the same manner as in the ordinary amputation of the ankle-joint, and the stump turned out remarkably good and useful. Mr. Simon considers that it was better than the stump left after Chopart's operation, because it was being undisturbed by muscular contraction; and better than Syme's because of its great breadth, its mobility in the joint, and the saved inch and a half of leg. This stump has been seen for several years, and it was found that it had worked very advantageously for the patient. The hospital case in which this same operation was resorted to refers to a railway labourer, about twenty-five years of age, who was admitted into the hospital in the summer of 1853, for injury to the foot. A carriage-wheel had passed obliquely over it from behind forwards and inwards, crushing everything in front of the line of incision, and also breaking and exposing the under part of the os calcis. The same amputation as in the preceding case was here performed, but the poor man died of tetanus. When he was seized of this fearful affection, the entire stump had very nearly healed; and in prospect of firmness, position of cicatrix, &c., &c., was as near a model stump as one could have wished to see. It was indeed extremely painful to notice, about a fortnight after the operation, that tetanus was approaching. Mr. Simon succeeded, however, in staying the symptoms for three days by the use of nicotine; but it then recommenced, as it were, with tremendous violence, and killed the patient in forty-eight hours.—*Lancet, Jan.* 28, 1854, *p.* 100.

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## 97.—ON DISEASE OF THE ANKLE AND TARSAL JOINTS.

By Samuel Solly, Esq., F.R.S., Surgeon to St. Thomas's.

[Mr. Solly proposes to review several cases of disease of the ankle and tarsal joints in detail. He says:]

Not many years ago disease of the ankle-joint, or scrofulous disease of the tarsal bones, almost invariably led to amputation of the leg

below the knee; but now we are able, in many cases formerly considered hopeless, to save the foot; and this is accomplished by the removal of carious bone by means of the gouge, acting on the same principle that guides the dental surgeon in the treatment of carious teeth; and I feel convinced that if the scalpel and the gouge were more frequently in the hands of the surgeon that he would be less frequently called upon to employ the amputating-knife and the saw.

I will read to you some brief notes of what I dare say some of you have called my pet case, from the interest with which you must have perceived that I have watched it, and the pleasure I have evinced in pointing it out as we visited the wards. Certainly one of the greatest boons that the discovery of chloroform has conferred on surgery is the impunity with which we are able to operate in these cases. All these painful operations must be more or less experimental, for as we cannot be certain of their perfect success, we should not have ventured so far into this hallowed path of conservative surgery without the support of chloroform. There is one great difficulty attending the treatment of these cases in private practice, which does not occur in our public hospitals—I mean the want of patience on the part of the patients and their friends. These cases are always tedious, lasting a long while, and frequently making but little perceptible progress from day to day, or even from week to week. The patient to whom I have already referred has been in the hospital two years and a half, and all his wounds are only just healed. But I will give you an outline of his case.

James S., aged 15, was admitted into George's ward, under my care, on the 16th March, 1852. He was a scrofulous-looking boy, flabby, but not emaciated; the glands of the neck were swollen, and at some points had ulcerated; there was also a chain of small ulcers under the chin, extending nearly from one ear to another. Both feet were swollen; in constant and severe pain; there were several sinuses, with unhealthy, sluggish, purple edges, surrounding the ankle-joints of both feet. At the bottom of these sinuses carious bone could be felt.

The left foot became painful and swelled about two years previous to his admission, and the right foot soon suffered in the same way. He attributed the attack to cold and damp. He was soon unable to walk from pain in the ankle-joint and across the instep, nor could he bear any pressure over the joint. He says that he then observed large, red lumps form over both ankles on the left foot and on the outer side of the right one. These abscesses were poulticed for a short time, and then they burst. They have never healed in the slightest degree from this time.

He states that he was under the care of a gentleman at Stroud, who did not probe the wounds; but that above five months previous to admission another surgeon from Fort Pitt, who carefully examined the ankles, stated that there was diseased bone, and that in all probability he would have to lose both his feet.

My first object on his admission was to improve his general health before submitting him to any operation; and having accomplished this by means of cod-liver oil and a generous diet, I had him first in the operating-theatre on the 16th of June, 1852. On this occasion, I cut down over the external malleolus of the left foot, and removed the whole of the external malleolus, a portion of the astragalus, and the articulating surface at the end of the tibia, laying open freely the ankle-joint. The chasm which was thus made was certainly a frightful one, and I confess that I trembled for the after consequences; but as the operation was performed under chloroform, there was no suffering. He had an opiate at night, and slept pretty well. I found him the next day more free from pain than previous to the operation; indeed, I have generally remarked that this is the case after the removal of carious bone, however severe the operation may have appeared at the time. The wound soon assumed a healthy appearance, suppurating freely, and throwing up florid and vigorous granulations.

On the 2nd of July, I performed nearly the same operation on the right foot, with equal success; and on the 2nd of October, finding that there was still some carious bone in the left foot, I again operated, on this occasion removing a large portion of the os calcis; and early in April of this year, I was again obliged to operate on the right foot, removing some carious bone from the os calcis.

The wounds and sinuses were all healed about the commencement of last August—that is, just thirteen months and a half from the performance of the first operation; and now, early in October, he can walk well with the assistance of a stick; the feet are both quite sound, and for a scrofulous subject he is really a healthy-looking boy.

These casts will show those of you who did not witness the operations the extent of the incisions, and give you some idea of the chasms which have been filled up.

Now you must not suppose that you will be equally successful in all such cases, and you must watch them with great care, seeing that the health of your patient does not suffer from the operation or the discharge which follows. You must be prepared to have recourse to amputation, if you think your patient requires such mutilation to save his life. You must watch the condition of the tongue, and let it guide you in the administration of tonics. If you find it getting brown or dry, abstain from quinine and its compeers, and give the effervescing mixtures, taking care at the same time to keep the bowels open. If there is much thirst, with fever and depression, you will find brandy with soda-water useful, adding the carbonate of ammonia to the effervescing mixture. If there is restlessness at night, give morphia, with an aperient in the morning; also calomel, if the liver is sluggish.

The next case that I have to relate occurred in my private practice, and I think it affords equal encouragement to follow this line of conservative surgery. The subject of it was a young lady, aged 14, who

sprained her foot at a boarding-school when dancing. She was rather strumous, though her parents were both remarkably strong and healthy. She states, when she first sprained her foot she paid no attention to it, though after a little while she suffered excruciating pain at night. I saw her first about two months after the receipt of the injury. She was then pale and thin, with a quick, irritable, feeble pulse, extremely nervous and anxious. The right foot was swollen across the instep to at least double the size of the other foot; there were two open abscesses, with nasty, unhealthy, purple edges over the chain of cuneiform bones which could be felt distinctly with the probe to be in a state of caries.

On the 11th of May, 1852, assisted by my friends, Mr. Martin, of Reigate, and Mr. Chaldecott, of Dorking, the chloroform having been administered by Mr. Carpenter, I made an incision on the inside of the foot, about two inches in length, directly through the abscesses down to the bone. I found the cuneiform medium detached, floating in pus. I gouged away the greater part of the cuneiform internum and a portion of the cuneiform externum.

On the day following the operation she expressed herself much relieved, almost free from the pain which she had suffered up to that time. On the 12th of June I removed some more carious bone, principally from the metatarsal bone of the great toe. She took the cod-liver oil and a very nourishing diet, porter, &c.; occasionally hyoscyamus at night.

In the following September she left the neighbourhood of London, and went down into Devonshire, to be under the care of Mr. James, of Exeter, and Mr. Pycroft of Kenton, from whose notes I may make the following extracts:

"Very soon after her arrival in Devonshire she began to mend, the discharge from the abscesses lessened, and the external sores healed to a considerable extent, whilst her general health and strength rapidly improved. About six months since, a fresh abscess broke on the outside of the foot, near the cuboid bone, and the probe passed through it grated upon the bone. She suffered severe pain for several days previous to this, but since she has had neither pain nor tenderness, and the foot will bear handling roughly. These three abscesses are still open, but on probing them to-day I did not touch bone. The discharge from them is a good healthy yellow pus, and slight in quantity; the sores look well, and are less in size; the foot is an inch less in circumference. She has rapidly gained flesh, is as stout and well-looking as most girls of her age; she has excellent spirits and appetite; can walk on her crutches three miles over our very hilly country; suffers no pain whatever; in fact, she tells me she forgets her foot. She is, and has been for two months past, able to bear her weight on the diseased foot, though I do not allow her to do so."

From this account I feel confident of her ultimate recovery.

This carious disease of the tarsal bones is often induced by what is

called a sprain. A simple *sprain*, pathologically speaking, is a stretching of a ligament to the extent of laceration of some of its fibres. In a scrofulous subject the bones are morbidly soft, so that the osseous tissue is torn, as well as the ligamentous, and this laceration is the primary cause of the caries. In considering the anatomy of the ligaments of the foot in relation to these injuries, let me remind you of the joints between the astragalus and os calcis, and the strong interosseous ligament which fills up the hollow between the two joints, by which these bones are united. The articulating surfaces are almost flat; the joints are not strengthened by any projecting lips, like the two strong malleoli at the ankle-joint. In all the balancing motions of the body the strain upon this ligament must be enormous. Its very bulk and strength demonstrates how much is required of it. When you dissect these ligaments of the foot mind you have a good look at it, so that you will remember it when you are in practice. You will often find the attachments of this ligament the seat of disease, and as the pus which is secreted from the carious bone finds its way most readily upwards towards the ankle-joint, this disease has often been mistaken for disease of the ankle-joint, and an erroneous operation performed. You will therefore see the importance of a correct diagnosis as regards the course of your operation; but it is also important in reference to your prognosis, for you will see that if the ankle-joint is sound your patient, in the event of his recovering with an anchylosed calcano-astragaloid joint, will still retain the motions of the ankle-joint.

The next cases to be related illustrate these observations.

The first is one in which some years ago I performed the operation of amputation, believing, and in this belief my colleagues concurred—that it was necessary to save life. I do not hesitate to say that, with my present experience of what may be done by the gouge and scalpel, the limb might have been preserved. It was the examination of this foot that led me to perform the operations of which I shall give some further examples in this day's lecture.

William B., aged 9, a sickly-looking boy, and of a strumous diathesis, about eighteen months previous to my being consulted, stepped off the kerb-stone, and twisted his ankle. On reaching home he felt some pain in the joint, and the foot swelled the same evening; but still the discomfort was so slight that he did not have any advice for three months. He was then placed under the care of a surgeon for three months more; after that he was admitted into Guy's Hospital, in which institution he remained nine months. During his sojourn there an abscess formed, and was opened, and he was removed by his mother, because, as she said, the surgeons told her he must have his leg off. The poor little fellow now came under my care, and I admitted him into this hospital. For eleven months I combated the local disease by the usual remedies, and did all I could to recover his constitutional debility, but to no purpose; and as he was evidently sink-

ing I amputated his limb, and he soon recovered from the operation, and in a short time left the hospital quite well.

*Examination of the Foot.*—Two fistulous openings on each side of the tendo-Achillis; ankle-joint sound; softening, ulceration, and disintegration of the interosseous ligament between the astragalus and os calcis; caries of the upper part of the os calcis in the situation of the posterior astragalo-calcanoid articulation; caries and absorption of the corresponding portion of the astragalus embedded in the os calcis; anterior and a little to the outer side of this—that is, just at the point of the inferior attachment of the interosseous ligament—there is a small osseous sequestrum, about the size of a filbert.

Now, all this mischief was evidently the result of the sprain, and I concluded that the sequestrum just described was more or less detached by the forcible torsion of the interosseous ligament. In scrofulous subjects the bone is softer and more yielding than the ligamentous tissue. This form of injury is, I believe, more common than is usually suspected, and I fear that many a foot has been amputated for disease of the ankle-joint when that joint has been sound, and the disease has really existed in the calcano-astragaloid joint.

Mary Ann M., aged 32, (but looks much older), married, was admitted into Queen's ward, under Mr. Solly, April 12, 1853. She has never been very strong, but has never suffered from serious illness of any kind. About six months ago, she began to suffer very severe pain in the right ankle; this she attributed to a sprain which she had received three weeks ago, although she had been suffering no inconvenience in the interval. The outer side of the foot, about and below the ankle, begun to swell soon after the pain commenced, and also became red upon the surface. The redness and pain extended some distance up the leg at first, but this soon went away by fomentation. About a month after she first began to suffer pain, (the swelling and redness having continued as at first,) a small abscess formed below the outer malleolus, which soon broke and discharged a very small quantity of pus; the opening which was thus effected has continued up to the present time, and has been followed by two or three others in the immediate vicinity. Lately too she has had some similar openings on the inner side of the foot; none of them discharge much pus. Her general health has suffered much during her illness; she looks pale and anemic, and feels low; besides this, however, she appears older than her age would lead us to suppose. The ankle as a whole is very much swollen, but the principal part of this is below the end of the fibula, and on the outer side of the os calcis; in fact. the malleoli can both be felt plainly, although there is slight swelling on each side. No fluctuation can be felt in the intervals of the ligament of the joint, nor has she any pain on pressure here. She cannot walk on account of the jar which is communicated to the whole foot. The swelling on the outer part of the os calcis is soft, quaggy, and not particularly circumscribed; upon its surface are several ulcerated

openings. A probe passes some depth in two of these, and at the bottom soft and carious bone is felt, which seems to belong partly to the astragalus, but principally to the os calcis. She has not noticed any scales of bone come away with the poultices which had been applied previous to her admission. One of the openings on the inner part of the foot leads to a sinus of about an inch long, which runs backwards horizontally and superficially, but does not go towards bone; one or two of the others go more inwards towards the joint, but not near bone. Cod-liver oil, one drachm, twice a day; porter, slice of meat.

April 23. A long semilunar incision was made from near the insertion of the tendo-Achillis to about the middle of the fifth metatarsal bone. Upon cutting deeper a considerable part of the os calcis was found soft and carious, and about one-third of its body, with a small portion of astragalus, were removed by the gouge; there was not much hemorrhage. The patient had chloroform. The extremities of the wound were afterwards brought together by plaster, but the middle left open.

May 1. She has considerably less pain since the operation than she had before it, and free discharge. The outside of the foot too is less swollen. The opening on the inner side remains the same as before. Cannot move the foot, however, without pain. She sleeps well, and considers herself better in health since the operation.

Aug. 30. During the period since the last report the openings on the outer side have gradually continued to fill up, and are now quite healed. Her health has considerably improved, and she has even some colour in her cheeks, and says that she is altogether in better condition. Although the openings are healed there is still some puffy swelling, and she has pain when she puts her foot to the ground. A free incision was made on the inner side of the ankle, below the inner malleolus, through a strumous abscess, but no bone removed. The incision healed up afterwards readily, and the sinuses with it.

Was presented Sep. 26. This patient was anxious to return to her family in the country; I therefore consented, though I stated it would have been better for her to have remained a little longer. Could not bear any weight on the foot, but has no open sores now. Has still some puffiness on the outside, but no tenderness on pressure. Health very good; in fact, better than it had been for some time.

The details of the above cases point very forcibly to the serious consequences occasionally resulting from sprains. Details of such cases in their early stages might be accumulated without number. Prevention is better than cure. Always remember that it is the duty of an honest surgeon to keep his patients out of surgery, just as it is the duty of an honest lawyer to keep his clients out of law. A sprain, especially in a strumous subject, is a very serious matter; and it is for this reason that the Almighty Creator has endowed the ligaments with such exquisite sensibility. The excruciating pain which follows

the undue tension of a ligament, teaches the non-professional man to take care of them in his own person, and still more ought it to teach the surgeon to protect and guard them after they have suffered injury. It is for this reason that I recommend, in the first instance, entire rest in all sprains while there is any inflammation; after a few days, I treat it as a fracture, and fix the foot completely either with the gum-bandage, which is on the whole the best, or by means of stiff buff-leather splints. These splints are softened with warm water, and then moulded to the foot. Gutta percha may also be used if you cannot procure leather thick enough, but I do not like the gutta percha as well as the leather.

A few days ago I was obliged to remove some carious bone from the os calcis and astragalus of a young gentleman, aged 17, who sprained his foot in April, 1852. He was walking quickly out of the garden gate, and catching his foot against a stone, gave it a sudden twist. He says that the pain was very severe; still he did not return to the house, but came up to London. He first consulted me last year, August, 1852. I found evidence of inflammation in the calcano-astragaloid ligaments and joints. I blistered the foot, and giving alterative medicines, confined him to the house for about two months. I then put on a plaster and leather splint, and allowed him to pursue his studies at King's College; but, unfortunately, this liberty proved too much for him, and inflammation again set in, followed by suppuration, great debility, and emaciation. A gutta percha splint, a wooden leg with a rest to it, cod-liver oil, and four months at the sea-side, restored his health so completely that I was able to lay open, without fear, two long sinuses, and gouge out some carious bone. The operation was performed under chloroform, and he tells me that he has been in much less pain than previous to the operation. He has returned again to the sea-side, and in a few months I hope to find all sound.

Harry G., aged five years, admitted into Queen's ward, under the care of Mr. Solly, July 19th, 1853. The child did not come under my notice until the commencement of my dressership on the 2nd of August. I then found him presenting the appearance of possessing the strumous diathesis in an eminent degree. He has light hair and eyes, and a peculiarly delicate, transparent skin; but there is no enlargement of the glands, nor other distinctive marks of scrofulous disease. The integuments of the right foot below the ankle are rather congested; the foot is swollen from a considerable quantity of inflammatory deposit in the neighbourhood of the heel, destroying the contour of this part of the foot. A small fistulous opening exists just over the outer malleolus, from which a slight fungous growth proceeds, and a purulent discharge exudes. A probe introduced into this papilla readily passes down to the os calcis, which is felt to be in a carious condition. The child seems in tolerable health for so delicate a subject; his appetite is good, and he sleeps well.

The only history which can be learnt concerning his disease is, that

for the past three months he has complained of his right foot, which became tender and swollen, and it was soon ascertained that he was unable to walk about as usual, the disinclination to place the foot to the ground increasing daily. A small abscess formed just below the outer malleolus; the skin gave way after a little time, and a little pus was discharged. A fistulous opening remained, through which a small quantity of pus has continued to discharge up to this date.

August 20. Mr. Solly desired the child to be conveyed into the operating-theatre, and to be placed under the influence of chloroform. This having been done, he made a longitudinal incision of about two inches and a half in extent over the situation of the os calcis, and below the papilla alluded to. This incision extended down to the bone, and with the gouge Mr. Solly removed the whole of the caries which involved the entire posterior half of the calcaneum. A piece of lint was introduced into the wound, and the child was removed to bed, and a warm poultice applied.

22. The foot is considerably swollen, and the wound is discharging freely. The child continued in good health, having suffered no ill effects from the inhalation of the chloroform.

27. Going on well. The wound is commencing to granulate from the bottom.

31. Progressing favourably; the granulation of the wound is proceeding; a free purulent discharge exudes.

Sep. 26. The granulations of the wound are on a level with the surrounding skin, and cicatrization has commenced, but there is still a slight discharge of pus.

Oct. 10. About the same. The wound is closing. The papilla is in the same state as before the operation, still discharging a little pus. The foot presents a better appearance, but there is still a good deal of inflammatory deposit in the neighbourhood of the diseased spot. The child's health continues very good.

Nov. 2. Improving daily.

You must not imagine that these cases are always successful. The following was lately under my care at George's ward, and the constitutional irritation produced by my first operation was such that I was afraid I should lose my patient. I was therefore obliged to amputate. You will perceive by the details that he was beyond the middle period of life, and there is no question that what the system will bear at twenty it would resent at fifty. You must therefore, in considering the propriety of operating, bear in mind the age of your patient, and after you have performed the operation watch your patient most carefully. This man was of an anxious temperament and he had been cast down a good deal by long-continued disease.

T. H., shopman, aged 52, admitted into George's ward on the 26th of May, 1852; disease of ankle-joint; is married, and has a large family. He is of quite temperate habits, and his health has been uniformly good, until September last, when he was laid aside for

about ten days on account of fever and general indisposition. He returned to work, but for some time was unfit for full occupation. Towards the latter end of October he experienced pain in the instep and ankles, with swelling of the part; the pain felt as though the bone was being bored with some instrument; it persisted through November and December, when he became a patient of Mr. Solly. The ankle was strapped at different times, but he did not rest the limb, and being more than usually engaged at this time—Christmas—the pain became much aggravated, and he was obliged to desist from work. In January an abscess made its appearance, and was opened; and for six weeks the limb was kept at rest on a gutta percha splint. Subsequently two more abscesses were opened. When admitted there were openings both on the inner and outer side of the joint, the inner one extending to the front of the joint; where some carious bone could be felt. The joint was considerably swollen, the foot extended, and he complained of a good deal of pain, especially when moved; there was not a very copious discharge from the openings.

On the 18th of June, Mr. Solly made a longitudinal incision in front of the joint, and with the gouge removed some carious bone from the end of the tibia and the astragalus.

July 10. He has not been relieved by the operation, and during the past week he has complained of loss of appetite and debility; there is free suppuration from the wound, and the least movement of the joint gives him excessive pain. Under these circumstances I was afraid of my patient sinking, and with the concurrence of my colleague, Mr. Green, I amputated the limb to-day at the junction of the middle and lower third, only, therefore, a little above the ankle-joint. I gave him this long stump to enable him to have a cork leg. The circular operation was adopted; there was free bleeding, from the difficulty found in tying the post-tibial artery, which had retracted very much. Three vessels were ligatured, the edges brought together by sutures and isinglass. Evening: he has not slept, but is quiet, and there has been but little oozing; pulse 110, soft; stump cool. Ordered, forty minims of tincture of opium immediately; soda water; repeat opium in the evening.

11. Tincture of opium, forty minims at night. He was feeling sick last night, for which the soda water was ordered. To-day he is feeling better; has had a quiet night, dozing at intervals; not in much pain; skin comfortable; pulse 106, quiet; tongue little white; bowels not open.

12. Ordered, aromatic spirit of ammonia, half a drachm; compound tincture of cardamoms, and tincture of rhubarb, of each two drachms; peppermint-water, two ounces. In the evening, tincture of opium, forty minims; the mixture to be taken occasionally. He was complaining last night of flatulence and abdominal pain, and the bowels not having been opened, he took at midnight a small dose of castor

oil, with twenty minims of tincture of opium, and has passed a large quantity of gas, but no motion. He has passed his urine well since yesterday morning. He still suffers much pain in the abdomen, but no tenderness or tympanitis.

13. Ice to the stump; a little hemorrhage; pulse 104, soft; tongue white and a little dry; skin comfortable, and stump free from heat, and looking well. The bowels have been relieved this morning, but, in consequence, the stump was somewhat disturbed, and hemorrhage has occurred to the extent of about an ounce. The stump was elevated, and ice applied for a short time; it is rather tense and swollen, but not to any considerable degree. There is no unusual heat of skin; pulse, 96, soft; appetite bad; tongue flabby and coated. He is much more free from pain; passes urine well.

14. Has had a tolerable night without opium; stump looking pretty well; strapping removed, sutures cut, and the edges brought together by a single broad slip, leaving the angles free; no heat or redness; tongue cleaner; appetite a little better; pulse 96, quiet; feels rather stronger; no return of bleeding.

15. Has slept at intervals; stump looking well; a little discharge from the angles; no redness or heat; bowels not open; tongue large, and coated at the sides; appetite tolerable; no abdominal pain; pulse 88, soft; no thirst.

18. The stump is discharging freely, and there is a little sloughing at either angle. Some large pieces of coagula were removed this morning. He has not had any opiate since the night before last, and his rest last night was much disturbed by flatulence and griping. His bowels have been lately open, and he is now easier; appetite is improving; tongue clean and moist; skin comfortable, and no heat or redness above the limb.

20. The two ligatures came away yesterday. He is doing well in every respect.

30. The angles of the flaps have closed, but the intervening part has been prevented from so doing, by sloughs of coagula and a very free discharge; there has been some tendency to burrowing upwards, there being some spots of redness and tenderness; the edges have been kept together a little by strapping and poultices applied over the end; health remains good; tongue clean.

Aug. 7. In dressing the stump, both yesterday and to-day, a long piece of slough has been removed, looking like intermuscular fascia; there is very free discharge of pus, which has burrowed some distance up the leg, and can be squeezed out; the bandage has been applied more firmly in consequence; the edge of the flaps are looking well, and only about half the extent of the wound remains to heal. He is complaining of loss of appetite and general weakness. Sleeps tolerably.

11. He has been dressed and out of bed the last three days, and is now in better spirits; tongue clean; appetite improved; rather less discharge from the wound. From this date he went on well, and he

is now able to walk with an artificial limb so well that a stranger would not discover his loss.

This case demonstrates that after the middle period of life conservative surgery has not the same prospect of success as at an earlier period; but I do not adduce the case to discourage your attempting it, but merely to warn you to be ultimately prepared for the more serious operation.

Nevertheless, from all these various cases I think you must agree with me in concluding that conservative surgery is the best surgery, and that we should all strive to promote its progress.—*Lancet, Nov.* 12, 1853, *p.* 453.

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## 98.—CASES OF EXCISION OF THE WRIST-JOINT.

By W. Fergusson, Esq., F.R.S., Surgeon to King's College Hospital.

[George G., aged 22, was admitted July 23rd, 1851. He received a sprain of the wrist twelve months ago. One surgeon said the bone was displaced; another said there had been no displacement; a third made an incision near the joint and let out a large quantity of matter. His state is thus described:]

The swelling extends from two inches above the joint to the centre of the metacarpal bones; there is a large and irregular sore on the palmar surface of the wrist; on the dorsum of the hand a large ulcerated opening at the base of the metacarpal bone of the thumb, and another at the centre of the metacarpal bone of the index finger. The joint is considerably deformed; there is much purulent discharge, and every movement which is imparted to the articulation gives excessive pain.

On admission, the hand was placed on a well-padded splint, presenting a depression at the wrist to allow of a poultice being applied between the splint and palmar surface of the joint. Mr. Fergusson now proposed excision of all the bones of the articulation which would be found in a diseased state, promising the patient not to remove the hand.

The operation was performed on August 16, 1851, the patient being under the influence of chloroform. Mr. Fergusson begun with a longitudinal incision on the ulnar side of the wrist; a parallel incision was made on the radial side, and a transverse one about one inch above the wrist. All the carpal bones were successively removed except the trapezium, the bases of three metacarpal bones being likewise in a carious state, were also taken off, as well as the styloid process of the ulna. No vessels required ligatures. The operation was, from its nature, and Mr. Fergusson's anxiety to keep the extensor tendons from injury, extremely tedious, and the patient a long time recovering from chloroform. The arm was placed on a splint similar to that used before the operation.

The greatest care was taken in the dressing of the wound, but the suppuration proved very profuse, cicatrization did not advance as steadily as could be wished, and several months passed away before any satisfactory progress was made. It seemed as if the part had not sufficient power to assume a healthy action, nor was it at all unlikely that the patient's constitution had a large share in this unfavourable result. It could hardly escape the attention of the observer, when viewing the hands lying on the resting-board, and connected with the lower end of the forearm only by some skin and a few tendons, that it would require an active and healthy circulation in the part to counteract the tendency to purulent transformation, and excite that amount of fibrinous deposit and organization which might have taken the place of the absent carpal bones. Nor should it be forgotten that one principal element of the process of cicatrization is generally absent in these cases—viz., perfect apposition of the supposed healthy osseous surfaces. To effect this, it is plain that pressure should not be applied in the usual circular way, but so contrived as to produce its effects from before backwards, thus bringing the heads or shafts of the metacarpal bones in almost actual contact with the lower ends of the radius and ulna. Nor is it to be feared that the apposition will become too exact, and be followed by osseous anchylosis; some space will, from the very structure of the parts, always be left for the formation of an artificial joint. This patient, after remaining almost nine months in the hospital, was finally discharged on the 26th of April, 1852, that he might reap the benefit of country air. It was expected that he would eventually show himself at the hospital, so as to give Mr. Fergusson an opportunity of ascertaining what progress he had made; for, on leaving the hospital, the various ulcerated openings and wounds made by the knife were not cicatrized, but discharging much pus. It is very probable that, if any further operation had been required, amputation would have had the preference.

[In another case there was caries of the wrist-joint, and the carpal bones were excised. This patient was 28 years of age; admitted May 4, 1853. Three years ago a swelling arose near the little finger; an abscess formed, but the mischief gradually extended up to the wrist. Nine months before admission the little finger was amputated and the metacarpal bone removed. A month afterwards he went to St. Bartholomew's, where iodine was applied, and iodide of potassium and cod-liver oil given internally.]

*State on admission.*—There is much swelling in the joint; the wound left after the amputation of the finger and that made last for letting out matter are not healed. There is a considerable degree of pain about the part, and the puffiness so characteristic of diseased joints. The patient's health is pretty good, and his constitution,

though originally somewhat strumous, does not offer any very striking features of scrofula.

On May 21, Mr. Fergusson, having ascertained the existence of disease in the wrist, proceeded to operate, and removed most of the carpal bones, and also gouged out a small portion of the extremity of the radius. Mr. Fergusson took advantage of the openings already existing, in order to take hold of the different carpal bones, being at the same time careful not to injure any of the flexors or extensors. The operation was of an extremely laborious character, as it was a matter of some difficulty to seize upon the bones, and remove them without injuring the tendons, and without considerably enlarging the openings. Mr. Fergusson succeeded, however, in taking away the greater portion of the carpal bones. The wrist and lower part of the forearm were wrapt in wet lint, and the patient sent to bed.

*Fifth day after the operation.* Wound healing by granulation; to have cod-liver oil. The wound progressed very favourably until June 10, twenty days after the operation, when a rash appeared at the back of the hand, and the wrist swelled again, the discharge being somewhat fœtid. Mr. Fergusson made a small puncture over the wrist-joint, when some ill-smelling pus escaped. The appearance of the part was thereby materially improved. The dressing, with gentle compression, was continued.

Two months after the operation another puncture was made, when only blood was evacuated, and the patient progressed pretty satisfactorily for several weeks, as far as his general health was concerned; but no signs of active cicatrizing effort were noticed in the wrist, which lay on the splint, displaying the different apertures which had been made, and which did not show any disposition to heal. Some motion was retained in the fingers to a very small extent, but enough to show that the flexors and extensors, as well as the extremities of the corresponding muscles, had not sustained any damage.

Mr. Fergusson, fearing that possibly some carious bone had been left, had the patient brought into the theatre on October 7, and narcotized with chloroform. Diseased bone in the region of the wrist was removed in the same manner as had been done before, and a portion of the end of the radius taken away at the same time. The treatment was continued as before, but on January 7, eight months after the original excision, some more carious bone was removed; and when we saw the wrist and hand a few days ago, the parts were in a pretty favourable state. Several ulcerated apertures might be observed both on the palmar and dorsal aspect of the hand; these were smaller than they had originally been, and Mr. Fergusson conceives that there is some likelihood of a final cicatrization taking place, leaving to the patient a moderately useful hand.—*Lancet, Jan.* 28, 1854, *p.* 98.

99.—*Disease of the Carpus; Excision of the Wrist-joint.* By J. Simon, Esq., F.R.S., St. Thomas's Hospital.—[John Ll., aged 19, was admitted May 25, 1852. A year ago an abscess formed in his thigh and discharged profusely. It gradually healed, but as it healed another formed over the metacarpal bone of the left hand. At the end of two months Mr. Simon was obliged to remove the bone. More abscesses formed, and it was found that most of the bones of the wrist were in a carious state; it was resolved, therefore, to remove all the diseased bone of the articulation.]

It will here be necessary, before mentioning the mode of operation adopted by Mr. Simon, to remind our readers that Mr. Erichsen removed the bones of the wrist by lateral incisions, and Mr. Fergusson also, by lateral incisions in one case, and by enlarging the orifices of fistulous tracts in another case. Mr. Simon, in contemplating the same excision, thought that the diseased osseous texture might be advantageously taken away by making two long incisions on the anterior and posterior aspects of the joint, reaching from about two inches above the wrist, back and front, to the centre of the palm and dorsum of the hand, the incisions being so managed as to run *between* the tendons coursing down to their destination on the metacarpal bones and fingers. On the 9th of October, Mr. Simon proceeded to operate in the manner just mentioned, and took away all the bones of the wrist except the pisiform and trapezius; one of the metacarpal bones was also excised. The wound made in front was brought together by sutures, but none were applied to the solution of continuity on the dorsum of the hand. Merely two vessels had to be tied. When the suppurative stage had set in, the wounds looked somewhat large; but after a few weeks' careful dressing, contraction began to take place. The patient progressed as favourably as might be expected for the first three months; but the time came, as happens with many excisions of joints, when reparative action ceases, several portions of the wound remaining unclosed, and discharging a rather large quantity of pus, whilst the boy was regaining, under the influence of good diet, cod-liver oil, tonics, &c., a fair amount of health. One year thus passed away, and just when it might be hoped that the final cicatrization of parts was not far distant, the patient was seized with all the symptoms of continued fever, and died about thirteen months after admission. It is to be regretted that no post-mortem examination was made; but it is clear, from the manner in which the patient was attacked, that he sunk under an affection independent of the operation above detailed. One circumstance should, however, always be taken into account—viz., the protracted stay of patients in hospital; this is, in most cases, extremely prejudicial to general health, and should always, as far as practicable, be avoided. It is very probable that many cases of partial or complete resection would end more favourably if the patients were as soon as possible removed from the wards, and placed under the most favourable influences as regards

general health. In fact, there is but little to do beyond simply dressing the wound after a few weeks are elapsed, and we consider that attention to this suggestion will tend to render the practice of excision of bones and joints more popular, as the results will be obtained in a shorter time than is now the case.—*Lancet, Jan.* 28, 1854, *p.* 100.

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100.—*Case of Excision of the Proximal Phalanx of the Thumb.* By T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary. —[George Brooke, aged 15, was admitted April 15, 1853, for disease of the thumb. He is tall and thin, but without marks of scrofula. First felt pain in the thumb six months ago. On May 11, an abscess formed on the palmar side of the first phalanx, which was opened and the bone found to be bare.]

Aug. 25. Mr. Teale proposed to remove the diseased phalanx, and to leave the terminal one. For this purpose, he made an incision, rather more extensive than the phalanx, along its radial border. The ligaments and capsule connecting it with the terminal phalanx were next cautiously divided; the shaft of the bone was then separated from the surrounding soft parts; and, lastly it was detached from the metacarpal bone. The thumb was dressed with wet lint, and the patient confined to bed. The case proceeded well, without any unfavourable occurrence.

Sept. 21. The wound is healed, the end of the thumb is preserved, and the entire thumb has much of its natural aspect, being a little shorter and thicker than its opposite fellow. The thumb has free motion through the medium of the metacarpal bone, and forms an excellent opponent to all the fingers.

Dec. 5. Since the last note, the boy has been regularly at work. There does not appear to have been any attempt at the production of a new bone, as the place of the excised phalanx is occupied by a firm ligamentous structure only. The terminal phalanx has free motion on the metacarpal bone, and the amount of shortening is exactly five-eighths of an inch.

The disease in this case was caries, and not necrosis; and at the time of the operation what remained of periosteum being adherent, was removed with the bone. The latter circumstance accounts for there having been no reproduction of an osseous shaft. The success of the operation with so unhopeful a form of disease is the more satisfactory. In some cases of diseased metacarpal or phalangeal bones, a genuine necrosis of the shaft takes place, and a thin shell of new bone is formed by the periosteum. The success of an operation is of course much more probable in such a condition than in one of caries. On Wednesday last, Dec. 7, we saw Mr. Simon remove from a man in St. Thomas's Hospital the whole metacarpal bone of the right thumb. The necrosis was quite recent, but the periosteum had

entirely separated from the bone; and Mr. Simon stated that he could feel in it, in parts, distinct plates of new deposit.—*Med. Times and Gazette, Dec.* 10, 1853, *p.* 603.

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101.—*Thickness of the Articular Cartilages at Different Periods of Life in the Human Subject.* By Dr. P. Redfern, Aberdeen.—Of the various phenomena presented to us by a living being, there are perhaps none more interesting, nor more strikingly illustrative of the action of the vital forces upon the tissues, than those of the development of different structures from the same primitive blastema, or from the same blood. What is the precise nature of the process by which a certain amount of material is converted in one position into bone, in another into muscle or nerve, it seems entirely beyond the reach of our present faculties to comprehend. We are, therefore, limited to the determination of the particular modes of development of different tissues, and the general laws which may be deduced from them. In such inquiries, nothing is more likely to lead away from the truth than prejudice in favour of a particular doctrine or system, nor does anything more surely obstruct the progress of science, or more certainly lead to the sacrifice of valuable time, than the existence of conclusions drawn by previous observers or authors from data which were not sufficiently accurate or extensive.

In investigations into the structure of healthy and diseased cartilage, commenced in the year 1848, and continued since that time, I have often been surprised at the statement that the thickness of articular cartilages gradually diminishes as life advances, owing to the conversion of the cartilage into bone; and my object in this contribution to the history of articular cartilage, is to show how far that statement is strictly accordant with facts. I do not hesitate to state that my earliest impressions were, that articular cartilages do not become gradually thinner as life advances, for I had observed them very thick in the aged on many occasions, and spongy and fibrous in old people generally. As such observations increased in number, I at length resolved to test the matter fairly, and with that view I made a large number of measurements of the cartilages of various joints at different ages, at a great sacrifice of time and labour when compared with the importance of the result.

If the thickness of the articular cartilages concerned merely their amount of elasticity, and their adaptation to the uses of the parts of the body to which they belong, it would be of great importance to know precisely what changes take place in them as life advances. We know that the bones and muscles of the aged person are very different from those of the young adult, and it might be expected that the cartilages would also be found changed, or if they should not be so, we should look for some cause for this exemption in the case of tissues made use of for the same general purposes as the

bones and muscles, and intended to harmonise with them in their action.

Mr. Toynbee, in his admirable paper "On the Organization and Nutrition of Non-vascular Animal Tissues," read before the Royal Society, and published in the 'Philosophical Transactions,' says:—"The articular cartilage . . . . . is gradually being converted into bone during the whole of life; thus, it is thicker in young than in old subjects, and, as Sir Benjamin Brodie informs me, it is much thinner in old age than in the adult; in fact, it is not very rare to find that the articular cartilage of the head of the os femoris, in many old persons, has completely disappeared—a change which is probably to be attributed to its entire ossification." In a note, Mr. Toynbee adds:—"This appears to be another of the many instances of the disappearance of the animal, and the increased deposit of the earthy, constituents of the body in old age." And again as one of seven leading facts which Mr. Toynbee believes that his researches tend to establish, he gives the following:—"Articular cartilage, during the whole of life, gradually becomes thinner, by being converted into bone."

[Dr. Redfern has compiled an elaborate table of the measurements he has made. He adds:]

From a conversation with Mr. Toynbee on the statement made in his paper before referred to, I found that his evidence on this matter had been derived from the observations and statements of others, rather than from measurements or observations of his own, and thus I believe that he has been thrown off his guard, and made to appear as the author and supporter of a statement which, under other circumstances, his habitual care and anxiety to arrive at the truth, would effectually have prevented from being made in so definite a manner.

In conclusion, I may state my conviction, founded on the measurements indicated in the table appended, that *articular cartilages do not become gradually thinner as life advances, and that they are not uniformly thinner in aged persons than in early life.* I may also remark that, in endeavouring to estimate the thickness of articular cartilages at different periods of life, I have had presented to me a large amount of evidence in addition to that which I formerly made public, that, as life advances, these structures, and especially those of certain joints, change their elementary characters, and become fibro-cartilaginous, or altogether fibrous. This change has its analogues in the conversion of the costal cartilages into bone, of tendons into fibro-cartilage and bone, and in those changes which age induces in the bones generally, in the cornea and other tissues. It may not improperly be styled *senile degeneration of cartilage.*—*Monthly Journal of Med. Science, Jan.* 1854, *p.* 21.

102.—*On Flap Amputation of the Thigh, Arm, and Forearm, producing very efficient Stumps.* By THOMAS WAKLEY, Esq.—[Two flaps are to be formed, one of the latter being one-third longer than the other, the long one having the narrowest base.]

Mr. Wakley explains his operations mathematically: thus, if the circumference of the limb be twelve inches, the anterior flap should be three inches, and the posterior six inches long, the knife having transfixed the soft parts so as to make the anterior or shorter flap seven inches at its base, and the posterior or longer flap five inches. By this method the measured cut surface of the anterior is exactly the same as the posterior flap; both, consequently lie together without strain or puckering, and the divided surface of the bone or bones is not in contact with the cicatrizing soft parts.—*Lancet, Jan.* 14, 1854, *p.* 34.

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103.—*On the best Means of producing a good Stump after the Operation of Amputation.*—[The form of the stump should be more or less adapted to the mechanical means to be employed. The following are a few of the rules which should be attended to:]

Respecting the length of stump which it is advisable to leave in amputations of the leg, when the surgeon can make a choice, he should regard the future convenience of his patient by leaving such a stump as will enable him to use with the best effect the artificial limb.

In all cases where practicable, the amputation should be performed at the upper portion of the lower third of the leg. This leaves a stump of sufficient length to give the patient a complete command over the artificial limb, without being so long as to interfere with its mechanical arrangements.

A greater length than this is not desirable, as it is no advantage to the patient, and merely adds to the difficulties in the construction of the substitute, the stump projecting so low in the socket as to interfere with the insertion of the artificial tendo-Achilles, and to render it necessary, in order to attain a requisite degree of strength, to make the ankle-joint of an unnatural thickness. When amputation cannot be performed at the lower third, any point between it and the commencement of the upper third may be determined upon.

Stumps of the leg may be deemed relatively good in proportion to their length from the lower to the upper third; the greater the length preserved between these points the better, and in no case should the limb be amputated above the locality alluded to. It is to be regretted that several writers of authority have represented the proper point for amputation of this part to be "at a hand's breadth below the patella," no doubt with a view of preserving the knee as an admirable bearing to rest upon, the support being afterwards adapted to it. This may be judicious when the social position of the patient appears to preclude the possibility of his availing himself of the improved artificial limbs of the present day,

being thus compelled to resort to the common pin leg; but in cases where there is a probability of his employing an artificial leg, amputation just below the knee should not be performed; for besides the objection to this proceeding in a surgical point of view, the stump, even should it not become contracted, (which is nearly always the case), is from its extreme shortness, and consequent defective leverage, comparatively useless, and frequently entails upon the patient no small degree of suffering from irritation produced by the incessant friction in walking. Therefore, in cases where an entire third of the leg cannot be saved, it is far more to the advantage of the patient to select the *lower third of the thigh* as the point for amputation; this leaves a stump of sufficient length and power, to which the artificial support can be effectively adapted; and it must be borne in mind that a good stump above the knee is far preferable to an indifferent one below.

For all amputations of the thigh, when choice of place is possible, the lower third is very decidedly preferable to any other. The defective leverage, and all the mechanical disadvantages in applying the substitute upon a short stump are here avoided, and the great extent of surface that is inserted into the socket permits, by a nice adaptation, the equal diffusion of pressure on the entire extent, a comfort duly appreciated by the wearer.

In amputations of this limb, and indeed of all others, it may be regarded as a general rule, that the longer the stump the better, of course premising that due allowance be made for the room required by the artificial joint, which does not exceed a space of five inches for the knee. But, as stated before, no advantage is gained by retaining the extreme length of the lower limb, which might in some cases be practicable.

Here, however, an exception should be made in favour of the operation performed by Professor Syme, and also respecting those cases of amputation of portions of the foot in which the ankle-joint is saved. These are certainly the most favourable to the patients, as is evinced by the free and convenient manner in which they are enabled to walk after the adoption of the artificial aids.

The foregoing rule is also applicable to cases of amputations of the arm, as regards the length of stump, with this *essential difference*, that in all cases where it is possible, the *elbow*-joint should be saved, be it ever so short, for it is impossible to construct an artificial joint which shall perform the varied movements constantly required from this important limb.

Amputation of the leg should not be performed upon children, but the lower third of the thigh unhesitatingly selected, for this very important reason, that the amputated limb ceases to grow in uniformity with its fellow, and the patient is doomed to the additional inconvenience of having one knee-joint elevated perhaps some inches above the other, and imparting to his gait a peculiarly grotesque appearance.—*Lancet, Jan.* 14, 1854, *p.* 33.

## ORGANS OF CIRCULATION.

### 104.—CASES OF POPLITEAL ANEURISM.

[In the first case, the patient, aged 32, was admitted under the care of Mr. Prescott Hewett, at St. George's Hospital, Aug. 1st, 1853, with a large popliteal aneurism, occupying the lower part of the right ham, and bulging downwards over the gastrocnemius muscle.]

A weight was for the first time applied to the groin on the 7th of August; but this could be borne for two hours only, owing to the excessive pain which is caused in the sac and in the leg.

On the 8th, the pressure was resumed, and kept up between three and four hours consecutively in the groin; but he was then obliged to give it up again, on account of the great increase of the pain in the ham and in the ankle; there was little or no pain, however. at the point where compression had been made.

On the 9th, the clamp was applied to the thigh at Hunter's canal, and borne for some time; then the weight was applied to the groin; but, in whatever way the pressure was made, it always gave rise to a great increase of the pain, both in the sac and in all parts below it. On examining the tumour, it was found to be firmer already, for the sac could no longer be emptied. There was less pain about the sac when it was handled, and the œdema of the limb was also much less. The man had now become accustomed to the use of the instruments; and, as he was found to be intelligent, and anxious to carry out the plan of treatment, he was left to regulate the pressure himself.

On the 20th, the tumour was decidedly less in size, and much more solid; there was but little pain remaining either in the sac or in the leg, and there was little or no œdema. The patient slept well, felt quite comfortable, and the opiate draught had been left off for two nights. During the preceding ten days, he had managed the apparatus for himself, having a "Carte's compressor" fitted to the thigh, and alternating its use with that of the cylinder-weight applied to the groin. He much preferred the former, having been able to bear it with less pain, and for longer periods. Altogether the pressure had been kept up for about six hours daily, at different intervals, and often for two hours or more during the nights when he has been awake; but he had made a practice of always removing the instrument when going to sleep. The pressure had been applied so as to allow only of a feeble circulation through the sac. There was neither excoriation nor redness about the skin, the instrument having been shifted from place to place along the course of the artery.

On the 26th the sac was firmer, and the pulsation less distinct; two small arteries were detected running over the back part of the sac, in a longitudinal direction. In the previous night, after having had the instrument on for several hours during the day, the patient had been

suddenly seized with violent pain in the leg and foot; he was asleep at the time, and had left the instrument off for about three hours. The pain was so great that he was obliged to get up and rub the limb, when, to his surprise, he found that all pulsation had suddenly ceased in the sac; the pain continued for several hours, during which time he could feel no pulsation in the sac; but the latter afterwards gradually made its appearance again, and in the morning it was very evident.

By the middle of September the sac had become so much contracted that it could scarcely be felt when the limb was flexed; the pulsation, although slight, could still be felt over a small space at the lower and outer part of the ham. The collateral vessels at the back of the sac were larger; there was no pain, and the parts could bear handling without any inconvenience. Compression had been kept up steadily for several hours daily, at different intervals, but the instrument had always been taken off during the night.

Being weak and languid, he was, on the 1st of October, ordered a pint of porter daily; and on the 8th, it was observed, that the pulsation still remaining in the sac could be readily controlled by direct pressure in the ham, and that without any pain. Under these circumstances an air-pad was placed in the ham, and the leg and knee were carefully bandaged; the ring-tourniquet was still applied to the femoral. A hard pad was subsequently made use of instead of the air-pad, and the knee was firmly bandaged, so as to check all pulsation in the sac. This plan of treatment was carried on for several days, and on the 18th, when the patient removed the pad for the night, as the tumour was very painful, no pulsation could be detected in the sac, but it re-appeared in a short time; it was very feeble, however, and there was great pain down the leg and in the ankle. The tourniquet and the pad in the ham were re-applied on the following morning, and compression kept up for several hours; and in the afternoon of the 19th all pulsation finally ceased in the sac.

The ring-tourniquet was kept lightly applied on the 20th, but all compression was removed on the 21st. For the last two weeks the patient has been up. The aneurismal sac is now very small, and quite solid. Several large collateral vessels can be detected running over the back of the sac, and over the inner condyle of the femur. The man is in good health.

[Another case of the same kind, under Mr. Lloyd, at St. Bartholomen's, was cured by compression on the 8th day. This patient, aged 24, was admitted May 4. The aneurism was the size of a pullet's egg, with a forcible pulsation. The common compressing clamp was applied at different parts of the thigh, so as *completely* to arrest the flow of blood through the tumour. The case did not at first proceed rapidly, but the patient was induced to keep the pad applied for twelve successive hours. On the next day the tumour was solid and no pulsation present. The only ill consequences were that a slough

formed on the part where the pad had been applied, but the sore soon filled up and healed. In another case of the same kind of aneurism under Mr. Lloyd, the treatment by compression failed, and a ligature was applied to the femoral. The patient was 34, and was admitted July 7, 1853, the aneurism being the size of a large orange.]

On the 8th, compression of the femoral was commenced, two clamps being applied, the one over the brim of the pelvis, and the other in the upper part of the thigh, and the patient directed to alternate the employment of them. The pulsation of the tumour, though easily stopped, could not be arrested by the amount of pressure he was able to bear, but it was considerably diminished. During the following night, the patient had but little sleep, and suffered severe pain; subsequently, however, it became somewhat more tolerable, and by the aid of a morphia pill (gr. $\frac{1}{4}$) every night, a little rest was obtained. On the second day, the pulse in the tibial vessels had become imperceptible, and, at the end of a week, the beating of the tumour was decidedly diminished. Satisfactory progress appeared to be making up to the 18th inst. (10th day), when the œdema of the limb which had existed, to some extent, throughout almost the whole period of treatment, began to increase considerably. On the following day, the whole limb was so much swollen, that it was deemed absolutely necessary to abandon, for the present, all attempts at compression. At this time, the aneurism, although not pulsating so strongly as at first, was extended in size in all directions; its walls felt much more solid than before, but it was tense, and very tender. The circumference of the knee measured two inches and a half more than the other. During the eleven days that compression had been tried, the man had been, notwithstanding the pain, in fair health, and had taken his food well. His diet had consisted of farina with some broth; no restriction had been placed on his consumption of fluids, but not being very thirsty, he had not drunk more than about a pint and a-half per diem. The digitalis draught had been regularly continued, and the bowels had been kept relaxed. On laying aside the pressure. Mr. Lloyd prescribed a saline effervescing draught, three times daily, and ordered cold lead lotion to be constantly applied to the knee.

During the five weeks which intervened between the suspension of the compression treatment and application of the ligature, the temperature of the entire limb remained somewhat augmented, the leg œdematous, and the parts about the knee swollen, tense, and tender. There was much numbness complained of in the foot and toes, often to such a degree that he could not distinguish which of the latter were touched. During the greater part of the time, however, the pulsations in the tumour were so feeble that Mr. Lloyd was led to hope that a spontaneous cure was in progress; on several occasions, indeed, the beating could but just be distinguished. Repeated relays of leeches were applied about the joint, and opiates and

sedatives were exhibited, under which the patient gradually improved in health.

On August 24, the propriety of the measure having been determined in consultation, Mr. Lloyd applied a ligature to the lower part of the upper third of the femoral artery, in the usual manner. The reasons which induced this alternative were, that notwithstanding the feebleness of the pulsation, the tumour remained for the most part fluid, and was gradually increasing in size, it having so filled the popliteal space, and distended its sides, that there was much fear that the aneurism might either burst externally or become diffused. During the previous three days, indeed, the condition of things had been becoming urgently threatening from the great tumefaction of the entire limb, which involved even a considerable extent of the thigh. The question as to amputating the limb was discussed, but, on the whole, it was determined to give the man the chance afforded by ligature of the femoral trunk. There was at this time, no evidence of the establishment of a collateral circulation, but the tibial vessels remained pulseless.

Since the application of the ligature, uninterruptedly favourable progress has been made. All pain ceased at once; pulsation has been ever since completely absent, and, even so early as the second day afterwards, the knee measured in circumference an inch and a quarter less than it had done previously. The ligature came away safely on the twelfth day, and the wound has since healed. There remained, for a few weeks, much numbness in the toes, but, coincidently with the decrease in size of the tumour, this symptom, together with the œdema of the leg, has gradually diminished.

[In another case under the care of Mr. Le Gros Clark, the treatment by compression also failed, and a ligature was applied to the femoral. The patient, aged 41, was admitted July 5, 1853. The aneurism completely filling the popliteal space. Compression was made alternately on the middle third and where the vessel crosses over the brim of the pelvis.]

The pressure treatment was continued, altogether for twenty-five days; and although, during the greater part of that time, the force employed was not sufficient to arrest the pulsation of the tumour, yet it caused such severe pain that the man seldom got much sleep, his appetite failed, and towards the end of the time it was evident that his health was materially giving way. No permanent alteration was effected in the condition of the tumour, which at times felt as if more solid, and then again became softer; on the whole, however, it rather increased in size, and the limb below it became considerably more swollen.

On the twenty-sixth day, (August 2,) Mr. Clark apprehending danger of the sac giving way, as portended by a blush of redness which had appeared on the most prominent part of the tumour, decided on immediate ligature of the artery, which he performed at half-past two

in the afternoon, the patient being under the influence of chloroform. In the evening of the same day, the patient was free from pain, the aneurism quite pulseless, and the extremity warm. The first night after the operation was a good one, by far the best the man had had since his admission. On the following day the tumour was examined carefully, but no pulsation could be detected. On the 4th instant, however, it pulsated slightly, though very perceptibly. On the 5th the pulsation had ceased, and never again recurred; it was not, however, until the 8th or 9th, that any appreciable diminution in the size of the tumour began to take place. From that time forward the progress to recovery was uninterrupted; the ligature came away on the 27th inst. (twenty-fifth day), and the wound shortly afterwards healed. On Sep. 5, the patient returned home in good health, the aneurism being painless, quite firm, and very much diminished in size.

[In the last of this series of cases of popliteal aneurism, under Mr. Luke, at the London Hospital, the treatment by compression was again unsuccessful. The femoral was ligatured, but suppuration took place, and the patient died. The patient was 60, admitted Oct. 28, 1852, the tumour the size of an orange, with a powerful pulsation.]

The trial of the compression treatment was commenced on Oct. 31, and extended over the space of a fortnight, during the greater part of which the pulsations in the tumour were very much diminished, but not quite arrested. When it was abandoned on Nov. 15th, the tumour was rather larger than before, very tense, and not at all more solid; and, on account of the pain caused, and the great œdema of the leg and excoriation of the thigh which had been produced, the plan was of necessity laid aside. The apparatus which had been used was one made especially to Mr. Luke's direction, and consisted in a strong elastic strap, which passed round the limb, was fixed behind to a broad leathern splint, and in front held in place the bridge apparatus, in which the compressing screw-pad worked. It had the advantage of being extremely light. Two of these were in use—one fitted to the thigh, and the other around the pelvis, to compress the vessel just below Poupart's ligament; they were employed alternately. The man, during the treatment, was on ordinary meat diet, and regularly took an opiate pill every night.

On the 17th, Mr. Luke placed a ligature on the femoral artery, and during the week following some progress seemed to be made; the man was relieved from pain; the tumour ceased to pulsate, and its size a little diminished; it did not, however, become firm. The limb had been enveloped in flannel, and the swelling of the leg had much subsided. On the 24th, an attack of severe diarrhœa came on, and although shortly checked by medicine, materially diminished the patient's strength, and, subsequently, the tumour became softer still, and the sense of fluctuation was felt more superficially. A week or two later, guided in his opinion by the progress towards the surface

which the contained fluid was evidently making, Mr. Luke expressed to the dressers and students his belief, that the tumour would have to open externally, but stated that he should not puncture it, as it seemed desirable to delay the opening as long as possible, to allow the blood to solidify as much as might be. On the twenty-fourth day the ligature came away, and the wound was closing favourably. On the 24th of December, the skin over the middle of the tumour gave way, and a copious gush of fluid blood followed. It was thought at the time, that there was more bleeding than the emptying of the sac would account for, and to prevent further loss, the house-surgeon in attendance had the cavity stuffed with lint. On the following morning, Mr. Luke removed the lint, and with his finger turned out of the sac a large quantity of soft coagula, after which gentle support was applied to the walls of the cyst, by means of a compress and bandage. Inflammation of the sac followed, and involved also the knee-joint, into which an ulceration had extended. Under the severe constitutional irritation induced, the man rapidly sank, and having steadily refused to accede to Mr. Luke's proposal for the amputation of the limb, he died about a month afterwards. At the autopsy there was found complete disorganisation of the entire joint; the anterior half of the aneurismal sac was converted into a pulpy mass; the femoral artery below the ligature was obliterated. The unfortunate result of this case cannot be considered as affording any evidence unfavourable to either of the plans of treatment adopted, being, in all probability, attributable simply to want of constitutional stamina on the part of the patient. Under the continued compression, alike as after the ligature of the femoral, the blood showed little or no disposition to coagulate; and when the tumour had burst, the want of vis conservatrix was again manifested by the ease with which the ulcerative action was allowed to involve the joint. It does not appear that the operation was very materially prejudiced in its hopefulness by the previous treatment, although it must be confessed, that the patient was to some extent weakened by the restlessness and constitutional disturbance it had occasioned. Even if the ligature treatment had been primarily adopted, it is not improbable that the same result might have followed.

[The following case, under the care of Mr. Thomas Wright, Nottingham General Hospital, is one of the most triumphant on record, having been *cured in sixty hours.* Dr. Bellingham, however, relates a case which was cured in 22 hours, and in which the aneurism was the size of an orange. In Mr. Wright's case the patient was aged 36, and admitted August 4, 1853.]

August 12. Compression of the femoral commenced; two clamps being applied, the one over the pelvis, the other in the upper third of thigh, and alternately tightened. The leg up to the knee has been carefully bandaged. The patient is on low diet, without restriction as to the amount of fluid.

13th. Owing to the stupidity of the patient, who cannot be made to understand the management of the clamps, the pressure has been much interrupted during the night. The pulsation in the tumour is not diminished. No pain is complained of; there are no feverish symptoms, and the temperature of the two limbs is equal. Pulse 88. The thigh being very fat, it is necessary to screw the clamps very tight in order to arrest the flow of blood.

15. Last night, a little before twelve, the patient discovered, while adjusting the apparatus, that the tumour had become quite solid and pulseless. This morning there is not the slightest impulse to be felt on firm pressure, and the mass is circumscribed and hard. He "feels as well as ever he did in his life; has passed two very tolerable nights during the compression;" has not required a single opiate, and has complained of but little inconvenience. He is directed to remain in bed, and, as a precautionary measure, to keep up gentle pressure for a day or two longer.

Sep. 13. Discharged from the hospital in every respect quite well, the aneurismal tumour being small and hard. He has been kept under care for the last ten days solely on account of an attack of urticaria febrilis, which has yielded to the ordinary treatment.—*Medical Times and Gazette, Nov.* 5, 1853, *pp.* 475, 479.

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## 105.—INJECTIONS OF PERCHLORIDE OF IRON AS APPLIED TO THE TREATMENT OF ANEURISM.

By M. Malgaigne. (Read before the Academy of Medicine, Nov. 8.)

M. Velpeau tried this remedy for the first time upon a student who was suffering from varicose aneurism, consequent upon venesection, at the bend of the elbow. The artery was compressed above and below the tumour. Eight drops of the perchloride, prepared by M. Dubuisson, were injected, but, upon the removal of the compression, the pulsations returned both in the sac and in the arteries of the forearm. No accident ensued, and on the eleventh day M. Velpeau injected ten drops more. Nevertheless, the aneurism increased, when inflammation having been subdued, it was deemed desirable to put a ligature round the brachial artery a week after the second injection. Inflammation, however, again came on, and the aneurism burst, and and the patient considered himself fortunate in recovering at all. Two days previously, M. Lenoir had tried the same plan of treatment for a popliteal aneurism, the size of a pullet's egg. Seven drops of the liquid were driven into the tumour, but the pulsations continued, and twelve days afterwards M. Lenoir, encouraged by the apparent harmlessness of the remedy, injected sixteen drops. No result, good or bad, ensued. As it was possible that the fluid might not have been good, M. Lenoir procured some of that prepared by M. Dubuisson himself.

He first injected six drops; then, no effect having been produced, six drops more; the pulsations, however, continued as before. For six days the patient experienced no inconvenience; but then, sudden pain in the popliteal space came on. On the day following there was inflammation; and, in spite of most active treatment, the result was death ten days after the last injection. Upon examination of the body, the femoral vein was found full of a reddish sanies, and the aneurism was full of a soft clot. These cases, observes M. Malgaigne, show that the surgeon has to encounter both inefficacy and peril in this mode of treatment.

A patient entered the Hospital St. Andre, at Bordeaux, for a crural aneurism, containing, apparently, nothing but fluid blood. M. Soule injected six drops of the liquid, when the tumour immediately became hard. Two days afterwards he employed a second injection of seven drops; severe pain, followed by inflammation, ensued, and, fearing ulceration of the sac, M. Soule applied the ligature to the artery in the usual way, after which the patient recovered.

M. Soule tried the same remedy for a small aneurismal tumour, consequent upon a puncture of the posterior tibial artery. The operation was unsuccessful. An incision was made into the tumour, and it being impossible to tie the ends of the vessel, compression was employed with success. M. Alquie, of Montpellier, injected the perchloride in the case of a traumatic aneurism of the ulnar artery. Severe inflammation came on during the night, and, after proper treatment, M. Alquie was obliged, on the tenth day, to tie the brachial artery. Nine days afterwards secondary hemorrhage ensued, and it became necessary to tie both the upper end of the ulnar artery, and also a large collateral branch.

"Is it not a curious circumstance," says M. Malgaigne, "that after the cure of the first aneurism by M. Raoult, which was no aneurism, and the two successful cases most dearly purchased by MM. Niepce and Serre, all the other cases have gone on badly?" But, to give further evidence, he calls attention to three more cases: one by M. Dufour, surgeon to the Hospital of Lectoure. In consequence of two injections into a large aneurism of the right carotid, the tumour became gangrenous and burst, and the patient was carried off by a fearful hemorrhage. A second, by M. Jobert (who will shortly publish the case); the patient died of gangrene of the limb. A third by himself, in which both the brachial actery and median nerve had been wounded. A traumatic aneurism, which ensued, was injected with six drops of the perchloride; pain in the limb, numbness of the hand, inflammation, and threatening gangrene ensued, when it became necessary to tie the brachial artery, after which the patient recovered.

Thus, there have been, out of eleven operations, four deaths, five serious complications, two cures; but the cures were obtained at much cost. M. Lallemand does not hesitate to acknowledge the dangers

attending this mode of treatment. M. Pravaz is no more, but M. Dubuisson confesses the risks, which he attributes to an excess of hydrochloric acid. He wishes to preserve the preparation neutral. But as the preparation of 45° cannot be kept without an excess of acid, he has adopted a solution of 30°, and he promises that this will be sufficiently energetic, and quite harmless. The author then relates some facts, to show how loosely cases have been reported, and he concludes that the injection of the perchloride of iron in varices appears less dangerous than in aneurisms. In the latter, the cures, though possible, are so rare, so complicated with severe accidents, and attended with so many chances of death, that no prudent surgeon would venture to expose his patient to so disastrous a mode of treatment.

An animated discussion succeeded M. Malgaigne's essay, and the conclusion left upon the minds of the audience seemed to be, that although M. Pravaz's bright anticipations had not been fully realised, although dangerous and even fatal complications had followed the employment of the perchloride of iron, yet the fact of the possibility of coagulating blood in the living body had been determined, and that further experiments and investigations in the same path were desirable. M. Leroy d'Etiolles has taken umbrage at the words "that he had entertained the idea of coagulating injections," &c. He stated, in a letter upon this subject, that he had no wish to deprive M. Pravaz of the merit of a disastrous invention, but that he was desirous of showing that the method of treatment by coagulation of the blood need not necessarily perish with the shipwreck of Pravaz's proceedings. Other fluids would coagulate the blood without acting upon the arterial walls, such as alcohol, sulphuric alcohol, the "Eau de Rabel," aluminous solutions alone, as combined with resins, &c.

He also thinks that the injections should not be attempted in the aneurismal sac, but in the tube of the artery above. The canula does not always penetrate the concentric clots so as to reach the fluid blood; consequently, the remedy does not act upon the circulating current. The inflammation in so large a part is often excessive; the amount of coagulating fluid must be more than would be required in the normal tube. He thinks that the clots formed may be driven from the sac by the force of the heart's action, and that they may plug up some of the smaller arteries, and hence cause gangrene of the limb; and he thinks this explanation applicable to the cases related by MM. Malgaigne, Alquie, and Jobert.—*Med. Times and Gazette, Dec.* 17, 1853, *p.* 636.

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106.—*On the Preparation of the Solution of Perchloride of Iron.* By M. Burin du Buisson, Pharmacien of Lyons.—[In our last volume, p. 218, we gave several cases in which Dr. Pravaz's method of treating aneurism, by injecting a solution of the perchloride of iron into the sac, was successful. The object, it will be remembered, of

this proceeding, was to induce immediate coagulation of the blood. M. Pravaz used the solution as prepared by M. Burin du Buisson, which is as follows:]

Take of perfectly green sulphate of iron of commerce, 23 ounces; water, 96 ounces; pure filings of iron, $3\frac{1}{4}$ ounces; sulphuric acid, by weight, half an ounce: introduce the entire into a matrass, or, better, into an enamelled iron vessel, digest on a sand bath until the disengagement of the gas ceases; filter; add to the fluid 16 ounces of liquid hydro-sulphuric acid, and allow the mixture to stand for twelve hours; at the end of this time place the solution on the fire; boil for half an hour and filter. To the filtered liquid add $6\frac{1}{2}$ ounces of pure and concentrated sulphuric acid; place the mixture in a porcelain capsule, or in an enamelled iron vessel, which must be only half filled; raise it to the boiling point, and add pure nitric acid in small portions, until its addition ceases to produce a disengagement of reddish fumes; then, withdrawing it from the fire, dilute the liquid with from 25 to 30 times its weight of cold water, and precipitate all the iron in the state of peroxide with a slight excess of water of ammonia; wash the precipitate repeatedly in distilled water, and, placing it in thin layers on linen, dry it by exposure to the air.

The dried and pulverized oxide is afterwards heated to redness in a wrought iron vessel, which, in order that the heat may not require to be too much elevated, should be wide and shallow; we now obtain the astringent *Crocus martis* of the shops, which, when it is thus prepared, is nothing but pure peroxide of iron.

The perchloride of iron is subsequently obtained in the following manner:—Take of peroxide of iron, prepared as above, $6\frac{1}{2}$ ounces; colourless and pure hydrochloric acid, 32 ounces; allow them to stand in the cold for five or six hours, then place the vessel on a bath at 212° F., allowing it to remain until the oxide is nearly completely dissolved; this part of the operation should be performed in a porcelain capsule of known weight; decant the liquid to separate the undissolved portion of oxide, and evaporate carefully over the water bath, and with constant stirring, to the consistence of a thick syrup, the weight of which is then to be ascertained; add a quantity of distilled water equal to half this weight; heat for a few seconds and throw the entire on a filter; wash the capsule and subsequently the filter with a quantity of water equal to the first, and to the former liquid add a quantity of the latter sufficient to furnish a homogeneous mixture of the density of from 4·35 to 4·4.

In proceeding thus a very limpid liquid is obtained, entirely pure, at the maximum of saturation, having only a slight acid reaction, and always uniform, keeping perfectly without the formation of any deposit, provided it be preserved in a well-stopped vessel. It is of a deep brown colour when seen by reflected, and of a greenish golden yellow when a thin layer is viewed by transmitted light.

Five or six drops of this liquid, mixed with the white of an egg diluted with six drachms of water, are sufficient to convert the entire in less than fifteen seconds into a mass which, when the vessel containing it is inverted, remains gelatinized at the bottom, and does not become detached until so long a time has elapsed that the water commences partially to separate like the serum of coagulated blood.

This preparation then combines all the conditions requisite to realize the hopes justly excited by the observations of Dr. Pravaz.—*Gazette des Hôpitaux.—Dublin Quarterly Journal, Nov.* 1853, *p.* 492.

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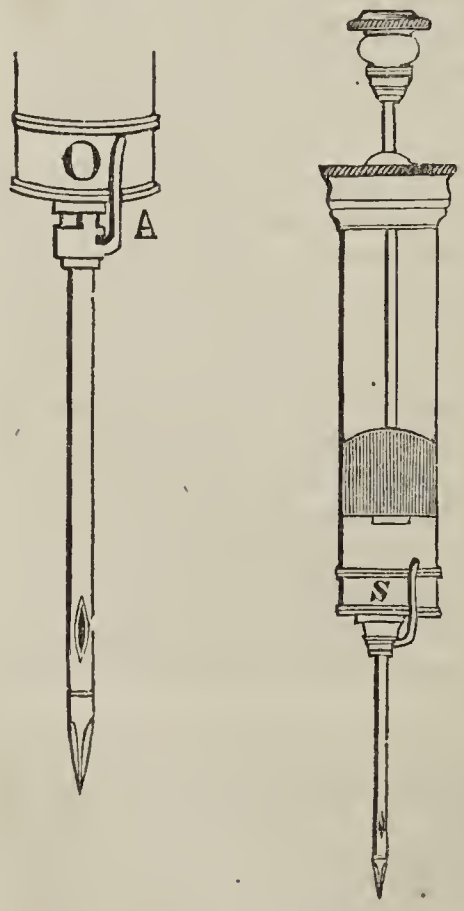
## 107.—TREATMENT OF NÆVI BY PERCHLORIDE OF IRON.

By Cooper Forster, Esq.

[This is a subject that has been frequently before alluded to in the medical journals. Mr. Forster uses a very pretty little instrument, a wood-cut of which we annex, with a description of the process.]

The instrument is a modification of the one proposed by Mr. Ferguson, and consists of a glass syringe, with an accurately adapted piston, and ending in a narrow platinum tube. In one side of this tube is an oval aperture, and over it another tube is placed, terminating in a trocar point, and having an aperture of a similar size. By rotating these tubes the one over the other, the openings may be made to correspond or not at the will of the operator. An indicator, A, marks their state as to whether open or shut.. Mr. Forster does not use the trocar point of the instrument to break up the structure of the nævus, as has been recommended, since he has found it quite ineffectual for that purpose. He believes that the free division of the whole morbid tissue is of the greatest importance to the success of the procedure, since, without it, the coagulating fluid does not obtain access to the blood on which it is to act. Having charged the syringe in readiness, Mr. Forster introduces a narrow-bladed tenotomy knife, and with a few sweeps divides subcutaneously the tissue of the nævus,



—if small, from a single point of entrance,—if large, from several. Immediately on the withdrawal of the knife the tube of the syringe is introduced; its indicator pointing to S. The tube is at once turned round, so as to point the indicator to O, and make the openings correspond; while at the same time a few drops of the fluid are forced out. During the withdrawal of the tube, in order to prevent bleeding, a little more of the solution is to be injected, so as to plug the orifice by the coagulum formed. If the tumour be a large one, the same process of injecting is to be repeated at two, three, or more places.

Mr. Forster informs us that, as far as his experience has yet gone, and it already includes quite a series of cases, this treatment always produces simple coagulation of the blood, unattended by inflammatory action. There is some increase of size in the tumour, and a hard clot forms, which is afterwards slowly absorbed, leaving the vascular tissue of the nævus quite obliterated. As examples we will subjoin the particulars of two cases, the only ones in which the process of cure is as yet complete.

[This statement must be a little modified, for while the above was going through the press, a case occurred in which the injection produced a little inflammation, and caused the formation of a few drops of pus. Mr. Forster had injected about ten minims,—a quantity which, he believes, as a rule, is more than it is safe to throw in at one spot.]

*Case* 1.—Thomas H., aged $1\frac{1}{2}$ years. The nævus was of the mixed variety, situated over the left frontal eminence, and had previously been subjected to treatment by the application of nitric acid without success. It was increasing slowly in size, and was about as large as a florin, and considerably raised above the level of the surrounding skin. It was injected for the first time on October 2nd; no incision was, however, made, and, from the imperfection of the instrument used, it was doubtful whether any of the solution was thrown in. No effects followed; and, on the 8th, the operation, according to the plan above described, was repeated. Probably, from five to eight minims were thrown in. The tumour became hard and swollen, but no constitutional disturbance or local inflammation followed; and, within a month, the whole had disappeared, with the exception of a few small cutaneous vessels. For the cure of the latter, a pad of lead was laid over the part, secured by an elastic band, and worn for a week or two. The disease now appears to be perfectly destroyed.

*Case* 2.—Louisa C., aged 11. The nævus was of the subcutaneous variety, situated on the right side of the neck, behind the border of the sterno-mastoid, and about the size of a small egg. Six years ago, it had been treated at an hospital by ligature; but it had subsequently enlarged to its original dimensions. On the 4th of November, the injection was practised. A free division of the diseased structure having been effected, about twenty minims of the solution were thrown in. As in the previous case, swelling and solidification were the only consequences, excepting that for three or four days afterwards the girl

complained of some pain. There was no constitutional disturbance, and no inflammation in the surrounding parts. The induration has since gradually subsided, and is daily becoming less; it now feels of an almost stony hardness, and is about the size of a filbert. The tumour has quite lost its vascular character.

[It appears from a preceding paper (Art. 105) that this treatment when applied in aneurisms has been very dangerous in France. This, however, has not been the case in nævi.]—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 655.

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108.—*Treatment of Nœvus by Tartar Emetic.*—In a paper read by Dr. Cumming, before the Western Medical and Surgical Society of London, after alluding to the various methods that have been adopted in the treatment of these tumours, and to to the objections that apply to many of them, he stated that the most satisfactory cures have resulted from the inflammatory process being spontaneously set up in them and producing the obliteration of the vessels by suppuration. He then mentioned Mr. Hodgson's plan of vaccinating the tumours, for the purpose of exciting the adhesive inflammation, but regarded it as a doubtful method of cure, since though the tumour might be studded over with punctures, only two or three vesicles might arise, and only a partial obliteration result. He suggested, therefore, the more effectual plan of treatment by tartar emetic, the method of applying which will be best illustrated in the following case:—A child, aged 9 months, was brought to him on account of its having lost a large quantity of blood from a vascular nævus on the right temple, the sides and centre of which had been removed by the vaccinating process. Pressure and cold astringent lotions were first applied unsuccessfully; he then determined to use tartar emetic, in order to excite a crop of pustules upon the tumour, hoping, that as the eruption produced by this agent resembled that occasioned by the vaccine virus, it might succeed in obliterating the distended vessels. A compound of fifteen grains of tartar emetic, mixed with one drachm of galbanum plaster, was spread upon a piece of thin leather, cut accurately to the size of the nævus. It was placed on the tumour, and, on the third day had excited some inflammatory redness, without causing much pain, and but little irritation. On the seventh and eighth day the pustules appeared, and, in order to secure as many as possible, the plaster had been daily pressed gently over the pustules. It was removed on the ninth day, at which time the eruption had completely involved the diseased structure. The pustules ran through their usual course, and, in due time, a slough was detached, and the ulcerated surface healed rapidly, the resulting cicatrix being scarcely noticeable. Eight similar cases were then successively narrated, in all of which perfect success had attended a similar plan of treatment, the only exception being, in one of them, where the cure was only

partial, in consequence of the tumour having been situated too near the lachrymal apparatus to permit of the free use of the tartar emetic plaster. In all the other cases, the scars which resulted were comparatively slight. He then exhibited a patient on whom he had thus operated for two nævi, one being situated on either brow; the cicatrices which had followed were not at all unsightly.—*Medical Times and Gazette, Feb.* 25, 1854, *p.* 195.

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109.—*Varicose Veins cured by Injection of the Perchloride of Iron.*—On the 12th of October last, M. Follin presented to the Parisian Chirurgical Society an individual in whom he had produced obliteration of the saphena vein by the method of M. Pravaz. The subject of the operation was a man 52 years of age, who had suffered for many years from a varicose ulcer of the right leg. The saphena was much dilated throughout the greater part of its extent. On the 12th of August, M. Follin injected the perchloride of iron into the vein at two points, one above, and the other below the knee. Coagulation of the blood took place immediately, the vessel became obliterated, and the ulcer healed in eight days. Up to this time the cure has been permanent.—*Monthly Journal of Medical Science, Jan.* 1854, *p.* 68.

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110.—*Case of Spontaneous Gangrene.* Under the care of E. Stanley, Esq., F.R.S., at St. Bartholomew's Hospital.—[Spontaneous gangrene does not always take place in parts at a distance from the heart; cases have occurred where the nose, for example, has been the part so affected. The pathology and the therapeutics in these cases are exceedingly interesting, and it is important to know what is the line of treatment to be pursued in such cases. The surgeon generally waits until the line of demarcation has formed before he uses the knife, except in traumatic gangrene, where the measures must be prompt and effectual.] There is, however, some danger in putting off too long the removal of a limb, in case of spontaneous gangrene; and in this opinion we are strengthened by the recollection of a case last summer, under the care of Mr. Hancock, at Charing-Cross Hospital. The patient was a man somewhat advanced in age, who had been attacked in the country with gangrene of the foot, which had gradually crept up the leg; the mischief was allowed to go on until almost the whole limb up to the knee was in a complete state of sphacelus. In this condition the patient was sent to the hospital, when Mr. Hancock had recourse to the only mode of procedure left—viz., amputation; but this measure had probably been too long delayed, and the issue was fatal, as the powers of life had evidently been so heavily taxed that they could not sustain the demands of a capital operation. The majority of our surgeons use stimulating rather than depleting

remedies, and simply because patients suffering from spontaneous gangrene, be they either young or old, are generally wanting power. Pain is not an invariable attendant to the process of mortification, though it is in some cases of an excruciating kind. In instances where the distress is great, very large doses of opium are well borne, and very beneficial. The only local stimulation used is warmth, by means of cotton wool or otherwise, this being sufficient for soothing, and preventing the sphacelus to extend further than the seat of vascular obstruction. The main object kept in view is the preservation of life, and the surgeon watches with a careful eye how far the system sympathizes with the work of destruction going on, being ready at a moment's notice to remove the limb at a distance from the necrotic process, to guard against the sacrifice of the patient's life.—*Lancet, March* 4, 1854, *p.* 247.

## ALIMENTARY CANAL.

### 111.—ON THE OPERATION FOR CLEFT PALATE.

By James Syme, Esq., F.R.S.E., Professor of Clinical Surgery in the University of Edinburgh.

[We have inserted, in former volumes, several interesting articles on this subject by Mr. Fergusson, (see *Retrospect*, Vol. xiii., p. 291; Vol. xxii., p. 409; Vol. xxiii., p. 183; and Vol. xxv., p. 253.) We now give the opinion of another eminent surgeon; this will be seen to be opposed to that of Mr. Fergusson. Mr. Syme says that the alleged advantage of dividing the muscle of the palate, in the way done by Mr. Fergusson, is "an entire delusion." We must let Mr. Syme speak for himself. He says:]

The knife which Mr Fergusson has recommended for the purpose should alone be sufficient to excite serious doubts as to the practicability of accomplishing the object in question; and if any one believes that he could divide completely the lax and yielding bellies of the palatal muscles by such means, his ideas of operative procedure must be very different from those which most anatomists would be led to entertain from their acquaintance with the animal tissues and the power of instruments upon them. That the muscles in question may be wounded or partially divided, I readily admit; but that they can be completely cut across, and still more, that they can be so with certainty, I no less positively deny. And if the division is only partial, it must be equally incompetent to produce the effect desired as an imperfect section of the adductor muscle of the eye-ball, is found to be for the cure of squinting.

The next point for consideration is the amount of advantage to be expected from division of the palatal muscles, supposing it were

practicable. If they remain undivided, it is said there will be a constant tendency to separate the raw edges, and prevent union; while if they are divided, the palate being rendered lax and flaccid, will be in the most favourable condition. But it may here be asked, does the presence of muscular contractility in other situations impede union? In harelip, when the patient cries, the edges of the fissure are drawn so completely aside as nearly to efface the appearance of a lip; yet, if the operation be properly performed, no inconvenience is experienced from this source, and a sound union is accomplished with almost absolute certainty. In wounds of the eye-lids or cheek, even when attended with a considerable loss of substance, and when the raw edges are widely separated by the muscular contraction, no difficulty is found in keeping or uniting them together. It seems, indeed, as if, through some intuitive influence of the vis medicatrix, the muscles of the part concerned cease to contract with violence, and merely give that degree of tension or firmness which is well known to favour the adhesive process. On the other hand, there can be no doubt that if the palate admitted of being rendered perfectly lax and flaccid, it would then become very unfavourably situated, either for the performance of the operation, or for the accomplishment of a satisfactory result, since, as every practical surgeon knows, there is nothing more opposed to sound union between the surfaces of a wound than the soft and flabby state which results from redundance or relaxation of the textures. From what has been said, it will, I trust, appear that complete division of the palatal muscles is impracticable,—that it is not requisite for a successful issue—and that, so far from being so, it would really be adverse to the object in view.

I may here remark, that very serious doubts have been entertained as to the expediency of performing this operation at all, since it cannot be attempted with any prospect of success until the patient is old enough to abstain from voluntary resistance; and then the organs of voice have become so practised in overcoming the difficulties of their imperfect condition, that closure of the fissure, so far from being always beneficial, sometimes appears injurious to the distinctness of the articulation. But as the operation, if undertaken, should be conducted as far as possible to assure a satisfactory result in regard to the accomplishment of its immediate object, I shall now offer some remarks upon the different steps which are required on the occasion; and as it may be supposed that, although the principle of Mr. Fergusson's operation has seemed to me so questionable, there is perhaps something in the mode of its performance deserving of attention, it will be proper to inquire particularly into the method which he recommends.

Mr. Fergusson advises that, in the first place, the muscles should be divided by cutting on each side deeply into the pterygoid fossa with his triangular knife, and then using scissors to complete the process. Now, granting that the object in view may be thus accom-

plished, which I entirely disbelieve, it is at all events evident that the patient's throat must be in a painful, irritable, and bleeding state when the next step is undertaken. But this step is of the most essential importance, since it is nothing less than placing the edges of the fissure in a condition admitting of their sound union, by paring them so smoothly and accurately that, without any undue loss of substance, the two lower surfaces may allow of perfect adaptation. How a process so nice and delicate is to be executed when the parts are obscured by blood, and the patient's power of self-command has been impaired or expended in enduring the much more painful preliminary proceeding, I am not at a loss to understand any more than the possibility of paring the edges of the fissure, as Mr. Fergusson advises, by seizing the uvula and cutting towards the commissure, especially with such a knife as the one he recommends for the purpose. which is thick and narrow instead of being thin and broad as it ought to be. How the stitches are to be got in does not very clearly appear from Mr. Fergusson's description ; but his advice to take them out on the second or third day seems in the highest degree objectionable, since the union, however perfect in the first instance, can then have little power of resisting pressure, either from food or the tongue, independently of the disturbing influence of the pharyngeal muscles. The threads should penetrate the whole thickness of the palate, and be tied with no more force than is sufficient to retain the edges in contact, so that in the event of union taking place, they may neither cause sloughing of the portion included nor cut their way out by ulcerative absorption. In the case of a young lady, on whom I lately operated with such success that the adhesion was complete to the very tip of the uvula, one stitch was removed on the eighth and the other on the tenth day.

In performing the operation, the best way of proceeding is to place the patient on a chair in a good light, then to seize one edge of the fissure at its middle by sharply pointed forceps, and introduce the knife, which should be thin and lancet-shaped like the one of this form used for the extraction of cataract, a little above the commencement of the cleft, and cut evenly down from this point to the extremity of the uvula so as to detach a slice of sufficient thickness to expose the submucous textures. The same process being repeated on the other side of the fissure, nothing remains but to introduce the stitches, which is best done by means of a slightly curved needle with fixed handle, which should be directed from without inwards, first on one side of the fissure, and then on the other. The two inner ends of the threads being then tied together, one of the other ends is to be pulled until the knot is drawn through the edge of the palate, and sufficiently far out of the mouth for the purpose in view. Two stitches are sufficient, one being placed at the root of the uvula, and the other midway between this point and the angle of the edges of the fissure. The threads should be tied

with the "reef knot" and in doing so, resiliancy of the textures may be counteracted by keeping the threads in a state of tension. For at least two days the patient should subsist entirely upon fluids, and of these even have a very sparing allowance. He should also, of course, avoid talking, coughing, sneezing, and all other actions calculated to disturb the uniting process.—*Monthly Journal, April*, 1854, *p.* 298.

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## 112.—TWO CASES OF INGUINAL HERNIA,

### IN WHICH THE SAC WAS PUSHED BACK WITH THE INTESTINE.

By James Paget, Esq., F.R.S.

[In the first case the patient, a strong and healthy-looking man, was admitted into St. Bartholomew's hospital on the 19th Aug., 1851. The hernia was of old standing, but on the evening before admission, in consequence of a severe exertion it became larger than usual, and he could not reduce it entirely. It appeared to be reduced; but he thought "some of it stopped" near the situation of the internal ring. During the night the great pain from the part prevented him from obtaining any rest.]

It seemed probable that this was a case in which either the hernia was returned *in masse* with the sac, or a portion of intestine remained girt at the internal ring, the rest being returned; but it was suggested that, while scarcely any signs of strangulation were yet manifested, the operation might be for a few hours deferred. Half an ounce of castor-oil was given. The patient soon after fell asleep; he slept soundly for two hours, and, on awaking, vomited; and then slept for another hour. His condition seemed unchanged. Five grains of calomel were given, and he again slept naturally for nearly two hours. Then, when he awoke, he looked ill: his face was not so florid, and had an anxious appearance; the parts about the inguinal ring were more tender, and his tongue was rather dry; he was thirsty, and had more severe griping pain; but his pulse was only 67, and had nothing unnatural in its beat.

He had grown worse rather than better in the five hours' delay, and I therefore operated at once. The inguinal canal was laid open in its whole length; and the lower border of the internal oblique and transverse muscles being freely divided, a hernial sac was exposed, extending from the internal to the external ring. During exposure, it became full and tense, and felt as if it contained omentum; but, when it was opened, only serous fluid, with some coagulated fibrin, escaped from it. The walls of this sac were half a line thick; it was white and smooth on its outer surface, and would have contained about half an ounce of fluid. When I passed my finger along and through the sac, towards the abdominal cavity, all at first appeared free and natural; I could feel only a large coil of small intestine, as if an empty ordinary hernial sac had been laid open, and the finger had been

passed into a healthy abdominal cavity. But, when the finger was directed far backwards, towards the back of the abdominal cavity, I felt, with its extreme point, something tightly constricting the most distant part of the coil of intestine. It was soon clear that this tight constriction was effected by the mouth of a hernial sac, pushed back with the intestine. I therefore pulled gently on the part of the sac which had been opened, and which lay in the inguinal canal, and presently drew down the remainder of it. This formed a nearly globular swelling, between two and three inches in diameter; it was filled with small intestine, which was dark with congestion, and very tightly constricted by its mouth. The mouth of the sac, sharp-edged, hard, and unyielding, was now divided, and the intestine was without difficulty returned into the abdomen.

[This patient recovered uninterruptedly.

In the second case the patient, an unhealthy looking man, was admitted Aug. 25th, 1853. He had had a scrotal hernia for twenty three years, but five weeks ago noticed a swelling appear in the groin, which, by means of the warm bath and an opiate, was easily reduced. The rupture for which he was admitted, did not yield so easily, and, in spite of the measures used for his relief, his condition is thus described:]

He was pallid; his face was expressive of severe suffering; and he often writhed with abdominal pain and griping about the umbilicus. He occasionally tried to vomit, and ejected small quantities of frothy mucus. In his left groin, at and just within the internal ring, one could feel a firm ill-defined swelling; but it was so painful, and so sensitive to pressure, that it was not possible to examine minutely the parts behind it, or deeper than it. In the rest of the inguinal canal, there was a slight feeling of fulness, but no other change, and one might have thought it healthy. The finger, inverting the scrotum, could be pushed into the external ring, and far along the canal, without meeting with any obstacle. The abdomen was moderately pliant, soft, and not tender on pressure. One might have felt nearly sure, that, in this case, the hernia was returned with the sac, but for the patient's account, that it was in this same state five weeks previously; that it had then returned almost spontaneously, and that for nearly six weeks, it had not been in the scrotum. But, whatever might be its state, the indications for an immediate operation were sufficient, and were followed.

On laying open the inguinal canal, there appeared in it, and extending just beyond the external ring, a collapsed portion of hernial sac, with thin, opaque walls, containing a small quantity of clear serous fluid. It was but slightly adherent to the surrounding tissues; and, when the lower border of the internal oblique and transverse muscles was freely divided, this portion of sac was found to be continuous with another part, which was distended with fluid, and stretched the

internal ring, and seemed to extend far backwards. Passing my finger on the exterior of this distended part of the sac, it seemed to go through a widened internal ring, and thence, without violence, backwards towards the sacro-iliac symphysis, or downwards to the brim of the pelvis; it did not easily pass upwards. Presently I found, that, in passing my finger on the external surface of the sac, as far backwards as possible, it seemed, at the furthest distance, to turn inwards as if towards a gradually narrowing neck and mouth of the sac. I tried to pull down what thus appeared to be the pushed-back sac; but it did not move. I therefore opened the sac at the part distended with fluid, and then pulling it down, at the same time as the parts about the internal ring and the ring itself were pulled upwards and outwards, brought the more distant portion gradually into view. This portion, which had been pushed back behind the internal ring, was about two inches in diameter, and its thickened narrow mouth tightly constricted a piece of small intestine between three and four inches long. The intestine was very dark, and its coats were thickened with congestion and with effused blood; but when the sac's mouth was divided it was returned without force.

[This patient recovered in the same favourable way. Mr. Luke's essay on cases like these, where the sac is pushed back with the intestine, render few observations necessary. Mr. Paget observes:]

In both these cases the rule was confirmed, that the erroneous mode of reduction is apt to occur in none but old herniæ; and this, though at first it may appear strange, is what might be expected: for a condition necessary to the event is, that the protruded intestine should be more tightly constricted than the mouth of the sac is, so that it may be more difficult to push the intestine through the mouth of the sac than to push the sac, or part of it, through the inguinal rings. Now, this condition can scarcely exist, unless the hernial sac have been long protruded, so that its mouth, enclosed within the narrow margin of the internal ring, may have become thickened and indurated, and less extensile than the tissues external to it.

Moreover, these two cases confirm the rule, that the reduction *en masse* is especially likely to happen in old oblique inguinal herniæ. The rule is due to the condition just mentioned. In the majority of such herniæ, there is an annular thickening and contraction of the mouth of the sac, which appears to be due to the formation of new and tough fibrous tissue in and external to the peritoneum. The thickening forms a band or ring, one or two lines wide, which, when the mouth of the sac is exposed from without may be seen and felt as an annular constriction. It is this which constitutes the stricture in a great majority of strangulated inguinal herniæ; this which needs to be "scarified," or thinned and made extensile, when the hernia, strangulated by it, is to be returned without opening the sac. Now such an annular thickening of the mouth of the sac occurs, if not

exclusively in the oblique inguinal herniæ, yet far more commonly in them than in those of any other form; and, for the reasons above assigned, it makes them more liable than others to the accident of reduction *en masse*.

Neither of these cases could show exactly the manner in which the hernial sac is removed from its connexions by the force used in the reduction. One could observe no ecchymosis on the outer surface of the sac, no signs of a violent severance of its tissues from those that surrounded it. The appearance was rather as if, though the mouth of the sac might have been violently separated from the internal ring, yet the rest of the sack had been pushed back by the looser cellular tissue around it being inverted, as the tissue round a testicle is inverted when it can be pushed into the inguinal canal.

The best collective evidences for the reduction *en masse* appear to be:—1st. The signs of strangulation continuing, or first ensuing, after the apparent reduction of a hernia; 2nd. The loss of a hernial sac, more of which, according to the history of the case, ought to be left in or beyond the inguinal canal; 3rd. A feeling of fulness at the internal ring, and, an ill-defined, firm swelling in the abdomen behind or below the ring; 4th. An amount of pain at and about the internal ring, which is quite disproportionate to that in any other part of the abdomen, as well as to the other signs of strangulated hernia; 5. The unusual drawing up of the testicle.

In these particulars, the cases I have related corroborate those already published, and confirm the rule, that, when these signs are found coincident, we should act in the belief that the reduction *en masse* has taken place. But the cases presented two rare and deceptive features.

1st. In each of them, the pushing back of the sac was so far incomplete, that the lower portion of it, containing fluid, remained in, and in one case projected a little beyond the inguinal canal. Feeling this portion of the sac, one might have assumed that no more had ever projected beyond the abdomen. But the case shows that we must count, among the indications of this accident, not only the complete disappearance of a hernial sac, but the marked diminution of one; that it may excite a suspicion, if we can feel, in and beyond the inguinal canal, only a much smaller hernial sac than, according to the history of the case, there should be. If, in either of these cases, the hernia had been properly reduced, its empty sack should have been felt, not only in the inguinal canal, but along the descending portion of the spermatic cord.

2ndly. In the second case, the sack had been pushed from its connexions five or six weeks before the severe strangulation ensued, and, once in the course of that time, intestine had probably been strangulated in, and returned from, the displaced sac. Such an event has not, I believe, been previously recorded; but a single occurrence of it diminishes the confidence with which we might expect that, in all

these cases, there would be the history of a very recent reduction of a hernia.

The incompleteness of a displacement of the sac, to which I just now referred, suggests a rule in operating. If, in the suspicion that a hernia has been reduced *en masse*, the inguinal canal be laid open, and no sac at all be found in it, the probability of an erroneous reduction is increased; but if, instead of no sac, one be found containing fluid, we might be apt to conclude that this is the whole sac, and that the intestine has been duly reduced from it. But the cases show, that the part of the sac containing and strangulating intestine may be pushed back from the internal ring, and that another part, containing fluid, may remain in the inguinal canal; they thus establish as a rule, that, in all such suspicious cases, we must not desist in the operation without being perfectly satisfied that all is right in the abdominal cavity, so far as it can be reached from the inguinal canal. In both the cases here related, after the exposure of part of the sac in the canal, the detection of its displaced but still constricting mouth was impossible, except by such an examination as would have been unjustifiable in an ordinary case. The sac's mouth was only just within reach of the forefinger, and the sensation received by the outstretched finger touching the intestine in the sac was at first deceptively like to that from intestine in the abdominal cavity.

I would add a remark on the after-treatment of strangulated hernia, as illustrated by these cases.

The abstraction of blood by nearly a hundred leeches, in the three days following the operation, in the first case, was intended against what appeared to be an active local inflammation of the peritoneum and adjacent tissues, in consequence of the violence used in the displacement of the sac and in the operation. The giving of wine on the third day after the operation, in the second case, was dictated by the fear that a peritonitis would presently ensue, against which treatment might be of little avail.

The effects of both these opposite treatments appeared to be good; and they indicated, as many other facts do, that there are at least two forms in which peritonitis ensues after operations for hernia. In one class of cases, it appears essentially the local consequence of injury; in the other, it is also, and rather, the local indication of a general blood-disease. In the one it is an active local disease, amenable to local treatment; in the other, it is only one part, one feature, of a constitutional disease of low type, which local treatment can scarcely affect for good.

We may probably compare the cases of the two classes with those of phlebitis after amputations; of which some are simple local inflammations of injured veins; others are inflammations of veins, associated with diseases of many other parts, and declaratory of diseased blood. The parallel would hold in many respects, and, among them, is this,—that the peritonitis or phlebitis of local origin and nature ensues very

early after the operation, or is continuous (in the case of peritonitis) with that which preceded the operation; while the disease of constitutional origin, whether peritonitis or phlebitis, comes on later, and with an interval of two, three, or many more days, in which no signs of it may be detected. There are similar differences and correspondences in the earlier and later erysipelas after operations; the former is mainly a local disease; the latter is the localised indication of a general disease; and, as in the corresponding cases of peritonitis and phlebitis, the one is a comparatively trivial, the other a very grave, disorder.

Now, the respective indications of the earlier and the later occurence of phlebitis and erysipelas after operations, are, I believe, recognised by many; and the time that has elapsed between the operation and the access of the disease is often reckoned among the facts determining the plan of treatment. A similar rule should be held concerning operations for hernia. In general, if peritonitis ensue within twenty-four hours after the operation; or, if it existed before the operation, and continue or is increased after it, it may be assumed to be chiefly a local disease, a simple inflammation of injured parts, which may be treated by local or other bleeding, by abstinence from food and stimulus, and perfect rest; or which, if it be slight, may be left to spontaneous recovery. If, on the other hand, the peritonitis first manifests itself more than twenty-four hours after the operation, it is probably an indication of a general blood disease of some low type, for which opium and well-regulated food, or even stimulants, afford the best hope of remedy.

I need hardly say, that this difference in the time of first appearance must not be taken as alone sufficient for the diagnosis of the two forms of peritonitis, or for guidance to practice; I believe only that it may be reckoned among the most useful indications. Neither may twenty-four hours after the operation be fixed as an exact time by which, according to their advent within or beyond it, we might class all the cases of peritonitis; it is, I believe, a fair general estimate, but nothing more. Nor must the one form of the disease be regarded as exclusively a local, or the other exclusively a constitutional, malady; each is only chiefly the one or the other; and, in different cases, we may find the constitutional and the local elements of disaase prevailing in various proportions.—*Med. Times and Gazette, Oct.* 15, 1853, *p.* 392.

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## 113.—RUPTURE TRUSS WITH SCREW ADJUSTMENTS.

By Dr. Neil Arnott, F.R.S., &c.

[The explanation below was furnished to Dr. Quain, by Dr. Arnott, for the purpose of his lectures. Dr. Quain, for the advantage of other surgeons, takes this opportunity of making it more generally known.]

Until about a century ago, the chief remedy or means of security

for ruptured persons was a pad placed over the weak part and bound on with straps; but so insufficient did this means prove, that most of the persons afflicted had to withdraw from the active duties of life,—they could not safely lift weights, nor run, nor ride; they could not serve in the army or navy. It was a great boon when the proposal was made to connect with the hernial pad a steel spring, which should keep the pad pressing with a known degree of force against the weak part. In most cases of hernia now, some form of steel truss is employed.

But there are attendant evils which lessen the advantages of the simple spring-truss as at present in use. The fact of its pressure being continued without interruption, and therefore when not wanted, as well as when it is, may produce the following effects :—

1. In cases of large rupture, requiring, of course, strong support, there often arise pain, inflammation, and even ulceration of the skin, rendering insupportable the use of springs of sufficient strength.

2. There occur in every case some absorption and stretching of the flesh pressed upon, and some impediment to the free entrance of the nourishing blood; all these being causes of increasing weakness as life advances.

3. The pressure on the spermatic cord interferes with the circulation in its vessels, as proved by the occurrence of varicose veins, orchitis, and impaired function of the gland.

Many of the forms of the spring-truss, that they may be accurately fitted to particular cases, require in the maker, skill and dexterity, which are not everywhere found; hence much disappointment and expense to patients, and need for more trusses than one.

It appears, therefore, that, if it were possible to give to the spring-truss the three following additional qualities, it would still more completely answer its purposes:—1st. That, after being applied with moderate pressure on its seat, it could be rendered so stiff or resisting that no force outwards of the hernia might overcome it. 2ndly. That this stiffness or rigidity should equally prevent the useless and hurtful pressure inwards of the pad when the person were at rest and the muscles relaxed; and 3rdly. That the construction of the truss were such that any ordinary-sized truss might be fitted accurately to any ordinary-sized person. Now, these additional qualities do belong to the truss with screw adjustments about to be described. The general appearance of this truss is the same as of the two-padded truss in common use. It is represented in the adjoining sketches, Fig. 1 showing it apart or by itself; Fig. 2 showing it applied to a hernia of the right groin. In both figures the same letters mark the same parts of the truss.

A main difference between this truss and the common truss is in the construction of the bow. In the common truss, the bow is a spring of a single plate, or of two plates always co-operating; the second plate, called a rider, being simply laid along the back of the principal within the same leathern sheath. In the new truss, the bow has always two

springs, but connected in a very peculiar way, so that they necessarily act together whenever the push of the hernia has to be resisted, and they are opposing or acting against each other at all other times, to prevent useless and hurtful pressure on the flesh. This paradoxical result is obtained by the arrangement now to be described. The outer spring of the new truss lies along the principal, as the rider of

Fig. 1.

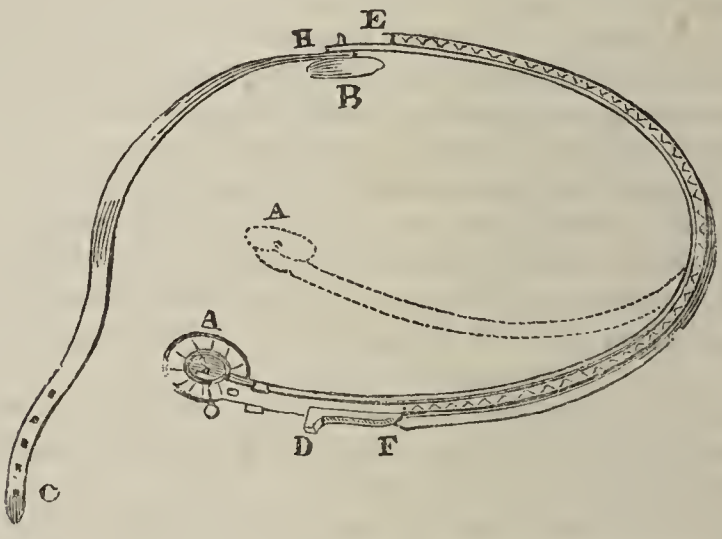
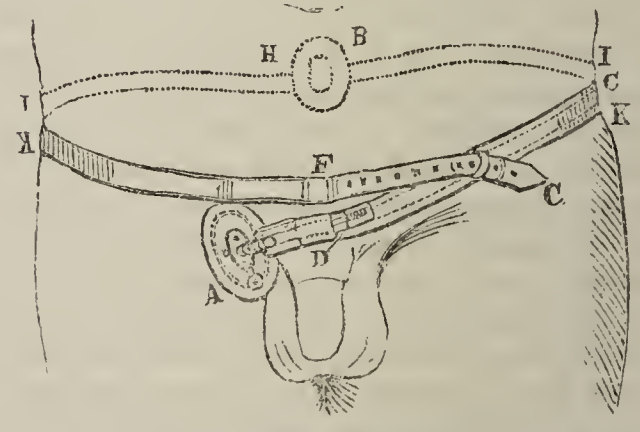



Fig. 2.




A is the front pad which acts in the groin. The dotted lines in Fig. 1 show the form of the truss when not expanded by the screw.

B marks the back pad, which rests in the middle of the lower part of the back, on the bone of the pelvis called the os sacrum. In Fig. 2 the dotted lines indicate the position of the part of the truss behind the person.

C is the hoop portion, or bow, which carries and connects the pads. It embraces rather more than half the body, resting, not on the ruptured, but on the sound side, in a depression between the prominence above of the haunch bone distinctly to be felt at I, and the prominence below of the thigh bone near the hip-joint at K. Its long arm slants downwards, quite across the front of the body, to the pad A placed on the hernial opening.

H G is the trap, slightly elastic; which steadies the truss in its place, by passing from the nail of the back pad to a button or buckle at F, near the front pad. It occupies, on one side of the body, a position corresponding to that of the truss bow on the other.

the common truss does, only not loosely like that, but with one end firmly riveted to the principal spring near the back pad at E, while the other end near the front pad at D, changing the flat form to that of a round wire cut as a screw, passes through a staple projecting from the principal spring at D, to receive there a screw-nut fitted to it. This nut, when turned, draws the round end of the outer spring through the staple, and thereby opens or expands the whole bow to any desired degree. To render the opening action more energetic, the springs are not placed in complete contact, but held a little apart by a waving wire laid between them. The bow thus opened out to fit exactly the size and shape of the person, almost without pressing on it, becomes, at the same time, so strongly rigid or stiff, that no pressure of a hernia can overcome it. The remark may be made here, that, as the bones of the pelvis are joined together immovably, a rigid truss, once well fitted to the pelvis, can need little future adjustment. The front pad of such a truss may be compared to a rock placed at a door to prevent opening, but which does not press against the door unless the door be pressed against it.

There are two other useful qualities belonging to this truss which do not belong to others:

1. It retains the advantages of the ball-and-socket joint for the front pad, while it avoids a great evil connected with it. The jointed pad applies itself exactly to the form of any surface on which it has to rest, and this was deemed a great merit of the truss in which it was first used. Surgeons now know, however, that the joint, at the same time, facilitates much the escape of the hernia,—for the ball becomes as a fulcrum, on which the hernia, working with the pad as a lever, can overcome the resistance of the spring, and free itself. The force in a hernia required to lift the edge of a jointed pad is often less than half of what would be needed to lift the edge of a pad immovably fixed to the bow. Many of the failures of the common double-padded trusses spring from this defect. In the screw-truss, after the jointed pad is once perfectly adjusted, a small ring-screw on its back completely clamps or fixes the joint.

2. In the screw-truss, by having the button or buckle for the strap moveable to different distances from the front pad, there is the power of causing the pad to rest higher or lower in the groin, and so of using the same truss for femoral and for inguinal hernia, and for either side of the person.

Directions for the management of the screw-truss.

1. The measurement to be sent to the maker has to be taken by a tape passed round the body in the depression already referred to between the letters I I and K K in Fig. 2,—that is to say, about an inch below the lateral prominences of the haunch bones. A medium measure there is 35 inches. In connexion with each pad of the truss, there are, near the extremities of the bow, three holes, allowing the effective length of the bow to be altered in many ways.

2. Before putting the truss on, it must be opened out or expanded by the main screw at D, so as nearly to fit the diameter of the body. It would strain the parts too much to open the bow by the action of the screw alone, therefore the ends must be held asunder while the screw is turning. This is conveniently done by placing the back pad under the edge of a table, or other fixed object, and then lifting the front pad upwards by the left hand, while the other hand turns the screw. When so held open, the back spring is slackened, and the screw is turned by the slightest force.

3. The truss thus expanded is to be drawn on to the body from the sound side, or that on which the rupture is not, until the back pad reach the middle of the back, and the front pad has crossed over the centre of the body to its place in the weak groin.

4. The front pad is to be placed over the site of the rupture as shown in Fig. 2, with its length obliquely upwards and outwards, that being the direction of the passage in the flesh along which the hernia has to descend, and with the lower end of the pad resting near the upper and outer corner of the central bone of the pelvis, called the os pubis. Of the exact position which best restrains the hernia, the patient himself will soon be able to judge. If, on making the effort to cough, he finds that the intestine does not descend, he may conclude that the position of the pad is good, and the restraining action sufficient. He should then tighten or clamp the ring screw which fixes the pad.

5. The final adjustment with the main screw at D, is to determine the amount of restraining pressure. The bow has to remain expanded so as to leave just the degree of pressure which will hold the truss, steadied also by the strap, in its place, and which can be easily borne. By turning the screw nut with the key provided in the direction of an entering cork-screw, the bow is opened further, and the pressure is lessened. By turning it in the contrary direction, the contrary effects follow. Even half a turn of the screw makes a great difference. However small the motion of the main screw to be made at any time, the back spring should always be rendered slack during the change, as already explained.

6. The truss-trap is to be made moderately tight, as it thus steadies the truss in its place without needing much help from the pressure or binding of the truss itself. There is this further reason for using a proper strap, that the direction of the pressure from pad to pad in the trusses used without straps is not that most favourable for restraining the hernia, while the pressure made partly by the truss-spring, and partly by the strap, is in the best direction.

7. After this truss has been used for some time, it will be worn more pleasantly over the inner shirt of cotton or flannel than under it.

8. The hernia should never be allowed to remain down, for, by then acting powerfully as a wedge, it quickly widens the hernial opening.

9. It is rarely necessary to wear a truss in bed, but it may be expedient occasionally to put the truss on and take it off while in the lying posture.

When hernia exists on both sides, a double truss is wanted. This can be made with the same qualities as the single truss, only having shorter bows, which do not cross in front, but pass from the groins to the large pad behind by the shortest ways.

*Caution.*—When the screw-truss is wound up, or expanded by the screw, the springs are on the strain, and an attempt then made to force the pads towards each other, might break a spring. This attempt can never be made but from thoughtlessness, as no purpose can ever be served by it; but there is no risk, when the truss is wound up, in expanding the bow to put it on the person.

[The truss has been satisfactorily made by Spratt, in Brook-street, Hanover-square; but it may be made by all truss-makers, for Dr. Arnott has declined to derive any pecuniary advantage from its construction.]—*Med. Times and Gazette, Dec.* 3, 1853, *p.* 573.

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## 114.—ON THE SURGICAL TREATMENT OF HEMORRHOIDAL TUMOURS.

By Henry Lee, Esq. (Read before the Medical Society of London.)

[In the treatment of these cases by nitric acid, benefit must not be expected to be derived till the small ulcers made by the caustic begin to heal. By the contraction of these the descending part, which is the lining membrane of the bowel, will remain in contact with the other coats of the bowel. If a considerable portion of membrane has descended, we may select certain portions, or we may limit the action of the acid by applying a small quantity at a time, by shielding the surrounding surface with a paste made of chalk water; but in all cases we must prevent the acid coming in contact with the thin skin around the margin of the anus.]

Every portion of mucous membrane to which the acid extends should be as completely deprived of vitality as possible, since the degree of pain experienced will necessarily depend upon the remaining sensibility of the parts.

Unless these conditions are observed, the application of nitric acid, or of any other caustic to the mucous membrane of the rectum, may prove as serious an operation as that for which it is intended as a substitute.

The nitric acid used in such cases should be the strongest that can be procured: that which is usually kept by chemists under the name of the strong nitric acid does not effectually destroy the surface to which it is applied; and when used, it therefore produces more pain than the strongest acid, and cannot moreover be so certainly relied upon to accomplish the intended purpose.

The most convenient way, perhaps, of applying nitric acid, when the tumours can be protruded, is to encircle their base with an instrument which will at the same time hold them in their situation, and make sufficient pressure to prevent hemorrhage in case they should be disposed to bleed. If necessary, any portions of the hemorrhoidal tumours, or of the mucous membrane, may be removed with a pair of curved scissors, and the cut surfaces immediately wiped dry, and touched with the acid. If the application of the acid be made before any bleeding has taken place, the blood in the divided vessels will become coagulated, and the vessels permanently healed.

Care must be taken in performing this operation, when any portions of mucous membrane have to be excised, that the pressure completely commands the hemorrhage; for if any blood escape from the part it will become mixed with the acid, and thus prevent it from effectually acting upon the surface to which it is applied. The instrument which is best adapted for restraining the hemorrhage under these circstances, and for holding the prolapsed tumour in position, consists of two parallel curved plates of steel with their internal edge slightly indented. These are connected together at their extremities, and by means of a screw or spring may be made to exert the exact degree of pressure required.

There is a large class of cases which generally pass under the common name of piles, which have not an inflammatory origin, and are not connected with any particular enlargement of the hemorrhoidal veins. In the cases alluded to, the inconvenience arises from portions of the relaxed mucous membrane becoming inverted and being griped by the muscular fibres situated at the lower part of the rectum.

The insensibility of the mucous membrane in this complaint frequently causes the symptoms to be referred to the neighbouring parts, and therefore the disease may exist without being recognised. A patient will complain of a dull pain over the sacrum, or a heavy aching pain in the perineum which neither he nor his surgeon can satisfactorily account for. In the course of time some other symptom presents itself, which draws attention to the rectum. The usual internal remedies for piles may now be administered, but these are found to produce no ultimate benefit, since the disease depends upon a mechanical cause.

In cases where the mucous membrane of the rectum has thus acquired an habitual disposition to "bag," it frequently happens that no medicine applied either generally or locally will afford permanent relief. The loose folds of membrane, which may or may not be connected with hemorrhoidal tumours, will descend again and again, and sometimes keep up irritation in the part for years.

Permanent relief in such cases can only be afforded by such means as tend permanently to brace the mucous membrane of the bowel. The simplest, as well as the most efficacious method of accomplishing this is to remove one or two longitudinal folds of mucous membrane in

the same way as above recommended for the removal of hemorrhoidal tumours. It is not necessary to remove the precise portion of membrane which has been protruded. The destruction of any portion after the wound has healed will have the effect of bracing the remainder. In this, as in the operation for hemorrhoidal tumours, it is the process of cicatrisation which cures the disease.

These observations, published in 1848, have been fully confirmed by increased experience. The application of the strong nitric acid to hemorrhoidal tumours of all kinds has now become very general, and there appears at present some danger lest this very useful remedy should be brought into discredit by being indiscriminately applied to all cases.

No satisfactory account has, as far as I know, been hitherto published, giving a description of those cases in which the application of the nitric acid alone is required, and those in which this will not prove effectual. To attempt to supply this deficiency and to describe the mode of proceeding which I have adopted where the application of the nitric acid alone is not sufficient, are the principal objects of the present communication.

A distinction might be drawn between different kinds of hemorrhoidal tumours founded on their different anatomical characters; but since these characteristics are themselves continually undergoing changes, such a distinction would be of little practical value.

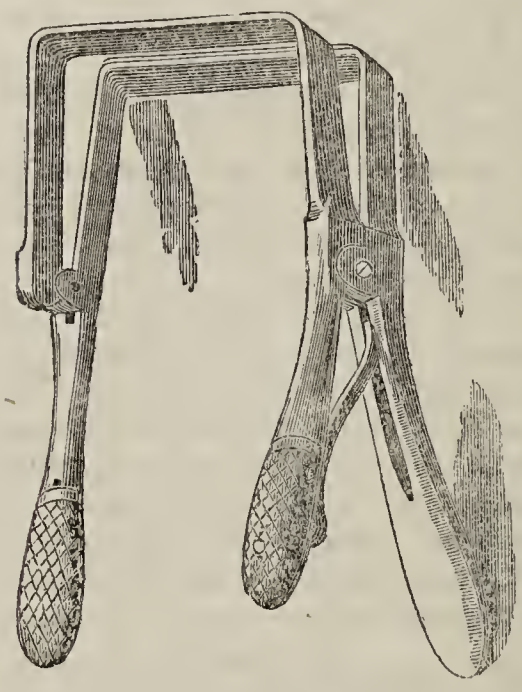
The cases which are met with in practice may be much more simply and conveniently divided for the purpose of treatment into those which bleed, or are composed of a soft vascular substance; and those which do not bleed, or are formed of firmer tissue.

1. For the first of the two classes of cases, the application of the nitric acid is an excellent remedy, and in the great majority of instances no other means of surgical treatment are required. The nitric acid, when applied, penetrates the substance of the tumour, and produces its effect as described by Dr. Houston, either by causing a superficial slough or by obliterating the vessels of the part. It possesses the very great advantage of giving very little pain if properly applied, of not requiring the confinement of the patient, and of being, as far as I have seen, perfectly safe.

[Where the mucous membrane, by exposure and by constant attacks of inflammation, has lost its character and become more of an articular character, though the application of nitric acid does no harm, yet it does not effect much good, because it does not cause contraction by producing a cicatrix.]

Whenever there is reason to believe that the application of the nitric acid alone will not act sufficiently upon the mucous membrane, the plan I have now for some time adopted is as follows:—the affected parts are first made to protrude, and then embraced by a broad forceps, made upon the plan of the instrument described by me in 1848.

The instrument consists of two parallel thin blades, with their opposed surfaces roughened, and closing by means of a spring. This may be made to exert any degree of pressure which may be required. With this instrument the prolapsed part is seized, and such a portion of it as may be deemed expedient is cut off on the side of the "clamp" next to the operator with a curved knife made for the purpose. The cut surface is then touched with the strong nitric acid, or with the actual cautery. The parts are returned into their natural position, and the operation is completed. This plan is equally adapted for the removal of hemorrhoidal tumours, and the excision of portions of relaxed mucous membrane, where no hemorrhoidal tumours apparently exist. The forceps retain their hold of the base of the prolapsed part after the requisite portion is removed. The cut surface is thus prevented from either bleeding or retracting, and it is held in a convenient position for the application of the cautery or caustic. This application is as essential a part of the operation, as securing any bleeding vessels is after an operation in any other part of the body.



It will frequently happen that the parts cannot be sufficiently protruded to be conveniently seized by the forceps which I have described. I have then performed the operation very satisfactorily in the following way:—a rectum speculum has a slide upon one side which may be removed; this is made to fit accurately into grooves on each side, so that by being withdrawn to a greater or less extent, a corresponding aperture is left in the side of the instrument. When the speculum is introduced, the slide is partially withdrawn, and the instrument moved about until the tumour, or the portion of mucous membrane required to be removed, projects into it. The slide is then closed, and the tumour is firmly held between it and the rest of the instrument; the projecting portion may then be cut off within the speculum by a long narrow knife, and the cut surface touched as before with the nitric acid, or with the actual cautery. Or, in case it should be deemed advisable to remove a longitudinal portion of the mucous membrane, the operation may be varied as follows:—the speculum, instead of being made single, is made double; that is there is one speculum within another so arranged that the outer one will revolve upon the inner. Each part

has an oval aperture at its side; when these apertures correspond, a tumour, or portion of relaxed mucous membrane, will readily project into the speculum. When the part to be removed has thus passed through the corresponding apertures, the different portions of the instrument are made to revolve upon each other, and thus the aperture is diminished, until the condemned part is embraced between its opposite sides. Being thus firmly held, the operation is completed as above described,

All the instruments which I have mentioned, are made by Mr. Matthews, of Portugal Street; and although they appear very simple now that they are finished, yet a considerable amount of time and patience have been required in order to get them adapted to their intended purpose.—*Association Medical Journal, March* 10, 1854, *p.* 211.

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## 115.—TREATMENT OF HEMORRHOIDS BY THE GALVANIC CAUTERY.

By Richand Steel, Esq., Abergavenny.

[In the present case the concentrated nitric acid had been applied, but had failed. It was determined to try the galvanic cautery.]

The apparatus which we have used for igniting the coil of platinum wire has been made by myself, and consists of a modification of Wollaston's battery of a dozen pairs, so contrived as to admit of being conveyed from place to place with the certainty of not deranging it; and it is set in action with ease and readiness when required. I had previously used a Grove's battery, which I had by me, but felt it desirable to arrange a battery better suited to be sent to a distance from home, and then found immediately ready for use.

The idea of using this plan of treatment for hemorrhoids was suggested to my mind on learning the satisfactory results of the galvanic cautery as used by Mr. Marshall, of University College Hospital, for the destruction of morbid growths, also for producing artificial contraction of mucous membrane, especially of that lining the vagina for the cure of prolapsus uteri. Having repeatedly employed the method so suggested for removing erectile tumours and semi-malignant growths, I was struck with the comparative painlessness of the application, and at once conceived the idea of applying it to the treatment of hemorrhoids. I was confirmed in the idea on examining a case requiring an operation, and which presented so large a mass of redundant matter, that I was anxious to avoid, if possible, inflicting the severe pain involved in the repeated use of the acid on the one hand, and the danger of hemorrhage following excision on the other. Here was a diseased mass to be destroyed, and relaxed mucous membrane producing prolapsus to be contracted; the loss of substance caused by the actual destruction of diseased tissue primarily, and subsequently

by the separation of sloughs, secured the first indication; the contraction of the cicatrices secured the second. The ignited platinum coil being applied more or less deeply, or over greater or less surface, will produce any amount of destruction of parts or of contraction that may be necessary. The smaller amount of pain and of danger to the patient is such, that I shall in future use it in the treatment of this disease, in preference to any other method with which I am at present acquainted.—*Association Med. Journal, March* 17, 1854, *p.* 246.

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116.—*Case of Hemorrhoidal Tumours treated by the Galvanic Cautery.* By Elmes Y. Steel, Esq., Abergavenny.—[In this case the patient had suffered from the tumours with prolapsion for thirteen years. He was so distressed with the complaint, that he had been compelled to leave the army. He had been under treatment in London, but had not obtained relief. Mr. Steel says:]

On examination, I found a mass, fully of the size of a cricket-ball, consisting of hemorrhoidal tumours, varying in intensity of colour and in degree of hardness, but all exquisitely tender to the touch. Having found by experience that the operation by ligature, however modified, was often followed by intense suffering, inducing irritative fever, whereas the application of concentrated nitric acid was always safe, certainly less painful, and frequently quite as successful, I determined upon using the latter method in the first instance.

Accordingly, on the 29th of last November, I applied the acid freely to the more prominent parts of the internal mass, avoiding the outer ring, which I had smeared with oil in the usual way. The pain thus occasioned was severe at the time, and continued for some hours, not altogether subsiding for several days, although not such as to require confinement to bed.

On December 4th, I found the hemorrhoidal mass somewhat lessened. A second and third application, at intervals of ten days, were followed by similar results; the hemorrhoidal tumours having sensibly yielded to the treatment, but still presenting a formidable appearance.

At this time, the suggestion of the galvanic cautery having been made to me by my cousin, Mr. Richard Steel, and he having supplied me with a battery of his own contrivance for the purpose, I determined upon resorting to it for the further treatment of the case.

On Jan. 18th, I proceeded to touch the more prominent of the remaining tumours with the ignited coil. The pain was comparatively so trifling, as to be thought insignificant; and immediately after the return of the gut, my patient walked about the house as if nothing had been done.

On February 8th, the parts which had been touched by the cautery were found to have sloughed away, leaving sulci, which will, I doubt not, on cicatrisation becoming complete, have effectually promoted the contraction of all redundant mucous membrane. The cautery was a

second time applied with similar results, and so effectually, that the patient can no longer protrude the hemorrhoids sufficiently to admit of external examination. He can now use any exertion, such as lifting heavy weights without inconvenience; and for the first time during many years he has relief from his bowels without pain or hemorrhage. He says that the galvanic cautery is painless in comparison with the nitric acid application; and I can vouch for the fact of its efficacy, as well as for the ease with which it can be applied to any extent that may be required. In a word, I feel assured that it is on every account a most valuable, safe, and convenient application for the removal of hemorrhoidal tumours.—*Ibid, p.* 246.

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## 117.—CASES OF INTERNAL HEMORRHOIDS.

By T. J. Ashton, Esq., Surgeon to the Blenheim Dispensary, &c.

[External hemorrhoids are commonly defined to be those covered by the thin integuments of the anus, and situated superficially to the sphincter muscle. There are others, however, differing in situation, and in the structures implicated, which are of a more troublesome and serious character. The following are cases of this kind:]

*Congestion of the Mucous Membrane of the Rectum, attended with great pain.*—A. S., aged 32, a carver, of ordinary stature and conformation, bilious temperament. Some years since he suffered from irregularity of the bowels; latterly he has been very costive. In the early part of November, 1852, he experienced great pain at stool, also aching and extreme discomfort at the fundament while at work; this was sometimes so severe as to compel him to go home. Slight bleeding from time to time took place. He applied at the Blenheim Dispensary, December 7th, 1852, complaining of great pain at the fundament.

On separating the margins of the anus, the mucous membrane was observed to be congested, and the hemorrhoidal veins turgid. Digital examination revealed no distinct tumours. The speculum ani showed the whole mucous membrane within the limits of the internal sphincter in the same condition as at the margin of the anus. His tongue was coated and notched; the countenance heavy and anxious; pulse more frequent than natural; bowels had not been moved the last two days. Five grains of grey powder and one drop of croton oil to be taken every night; to wash the anus night and morning with yellow soap and water, and to use half a pint of cold water as an enema after each dejection.

He took one of the pills prescribed on the three following nights; the bowels were freely acted on, and he felt much less fulness and aching in the rectum. Ordered to omit the pill, and to take a teaspoonful of a laxative confection every night; to continue the ablutions, and to use the enemata of cold water.

In three weeks he was free from all disease, and by having recourse to the electuary occasionally, if the bowels were at all confined, he has continued perfectly well.

*Internal Hemorrhoidal Tumours in an early stage cured.*—J. S., aged 19, a shoemaker, came under my care at the Blenheim Dispensary last year, affected with syphilitic lepra, for which a solution of bichloride of mercury and arsenic was ordered, and he progressed favourably. On the 8th of March, 1853, he complained of having three or four days experienced pain, weight, and throbbing in the rectum, increased at stool, and attended with the discharge of a small quantity of blood. For several weeks his bowels have been constipated, and he has sat at work from an early hour in the morning till late at night. His eyes are dull; the sclerotic conjunctiva slightly tinged yellow; tongue furred, and the teeth indented into the edges; pulse quicker than natural; skin hot and dry. On examining the rectum, the mucous membrane was observed to be congested, and several small purple lumps were seen immediately within the margin of the sphincter. Five grains of grey powder and one drop of croton oil to be made into a pill, and to be taken at bed-time. To use ablutions of soap and water, and to throw half a pint of cold water up the bowel after each stool.

March 10th. The pill acted freely. Has less uneasiness this morning. To take three grains of blue pill, and two of extract of conium, every second night; and a draught every morning of compound infusion of gentian, half an ounce; compound infusion of senna, an ounce; Rochelle salts, a drachm and a half. To continue enemata and ablutions.

22nd. He has continued the remedies. All the symptoms have subsided, and his general health has greatly improved. To omit the pill, and to take the draught twice a week, and to use the soap and water.

April 5th. Has had no return of the hemorrhoidal affection; the mucous membrane of the bowel perfectly healthy in appearance.

*Internal Hemorrhoids; much loss of Blood, attended with Giddiness and Drowsiness.*—R. R., aged 38, was advised to consult me by my friend Mr. Bennett, surgeon to the Bloomsbury Infirmary. About fourteen years since, he first suffered from external piles, which have continued to trouble him more or less up to the present time. Eight years ago, he experienced pain within the anus, and a sensation of the presence of a foreign body. Defecation was difficult, attended with increase of pain and hemorrhage; and from that period he has continued to lose a considerable quantity of blood at intervals; he has also been annoyed by a constant discharge of mucus from the bowel. He has always been subject to constipation, and suffered from flatulence, pains in the abdomen, giddiness of the head, and depression of spirits. His habits of life are temperate.

He came to me on the 10th of November, 1852. His countenance

was sallow; eyes dull; lips and gums pale; tongue furred; pulse frequent and irritable; bowels acting scantily and irregularly; has little power in retaining the fæces during any violent exertion; the bladder is irritable, and he has some difficulty in micturating. The anal orifice is surrounded by a margin of loose skin, evidently collapsed external piles; the sphincter ani is relaxed. On introducing the finger within the intestine, two large internal hemorrhoids were felt; these were extruded by a very slight effort of straining; the mucous membrane was then seen in a granular state. He informed me that the hemorrhoidal tumours descended by walking, or riding in any vehicle that shook him much. To take six grains of extract of taraxacum and three grains of blue pill every night, and in the morning a teaspoonful of an electuary, compounded of confection of senna, sulphur, bitartrate of potash, jalap, copaiba, ginger, and a sufficient quantity of syrup. To use ablutions of soap and water night and morning.

Nov. 14th. Has taken the medicines ordered; the bowels have acted every day, but not freely; passed some clots of blood yesterday, and this morning a tablespoonful of bright blood. To continue the medicines.

17th. Has had very little pain, and passed but a small quantity of blood; still complains of drowsiness and giddiness. Examination of the urine demonstrated an excess of urea, and under the microscope numerous crystals of oxalate of lime were seen. To take an ounce of the following mixture twice a day: Compound infusion of gentian, ten ounces; sulphate of magnesia one ounce; dilute sulphuric acid, a drachm and a half. To inject half a pint of water containing sixteen grains of sulphate of zinc after each evacuation of the bowels.

Dec. 1st. He has taken the medicines regularly, and used the enamata as directed. Feeling so much better he did not think it necessary to see me at an earlier period; has had no sanguineous discharge the last twelve days; a slight mucous discharge continues; he can now retain his fæces during exertion. He was drowsy on one occasion since his previous visit to me, but is not so now; his eyes are bright; countenance clear; pulse 76; the irritability of the urinary organs has ceased.

15th. Has continued the medicines, and expresses himself as feeling better than he has for many years; his countenance is clear and healthy; pulse regular; appetite good; he does not suffer from flatulence; has gained strength, and does not feel fatigue after an ordinary amount of exercise. To inject cold water only after each stool.

This patient visited me a few weeks since, he has continued to take the medicine occasionally, and has not omitted the injection of cold water; the only annoyance he experiences is a mucous discharge from the anus. I examined the bowel; the internal piles were still large, but not turgid; the mucous membrane in a much healthier condition. Removal of the piles was advised in the first instance, but his occupation prevented him laying up for a few days, and, as he now suffers but little inconvenience, he is content to remain as he is.

*External and Internal Piles; considerable Bleeding; Palpitation of the Heart.*—A. A., aged 56, married, of moderate stature, very stout, applied at the Blenheim Dispensary, Oct. 2nd, 1852, in consequence of considerable losses of blood per anum when at stool. She appears exsanguinated; her lips, gums, and tongue, are colourless; the countenance is anxious and sallow; pulse quick, weak, and irritable; and she complains of violent palpitation of the heart, induced by slight exertion. She has long been of a constipated habit of body, and has not taken much exercise the last several years.

The present attack commenced by itching of the anus, followed by a feeling of fulness, throbbing, and acute pain, the latter extending up the sacrum and down the inside of the thighs. Hemorrhage took place, and after it had occurred a few times, the feeling of fulness and pain became much less. On making an examination, the margin of the anus was observed surrounded by external piles in a state of semi-distension; digital examination of the bowel demonstrated an internal pile on the right side, the size of a cherry, and having a broad base. Directed her to return home, and to confine herself to the recumbent position; to have an enema of a pint of thin gruel thrown up the bowel at once, and to take a teaspoonful of an electuary containing copaiba at bed-time.

Oct. 3rd. The enema brought away a quantity of indurated fæces. The bowels have acted twice this morning, attended with hemorrhage. To continue the electuary at bed-time, and to use half a pint of water containing a scruple of tannic acid, as an enema, after each stool.

6th. Loses much less blood at stool; the confection moves the bowels twice a day. To inject cold water only after defecating, and to use soap and water externally night and morning.

16th. But slight bleeding now occurs; she is much troubled with flatulence. To continue the enemata of cold water and ablutions; to take every night seven grains of compound rhubarb pill, two grains of blue pill, and two grains of extract of henbane; and twice a day an ounce of compound infusion of gentian, five grains of carbonate of ammonia, and a drachm of compound tincture of cardamoms.

20th. Has had no bleeding since I last saw her; countenance brighter, tongue clean, bowels acting regularly. The external piles collapsed, leaving an irregular fold of integument, half an inch in length, around the anal margin.

April 7th, 1853. This patient continues free from all pain and inconvenience; she takes the pills occasionally, and has not omitted to observe ablutions night and morning with soap and water.

*Strangulated Internal Piles, preceded by excessive Hemorrhage, relieved.*—D. B., aged 34, a jeweller, applied at the Blenheim Dispensary, Sept. 27th, 1852; above the average height; of ordinary conformation; bilious temperament; complexion unhealthy; habitual state of mind melancholy; habits of life irregular; has suffered for fourteen years from external piles; during the last four years has lost a con-

siderable quantity of blood from the rectum, and has experienced great pain within the gut.

The present attack commenced on Sept. 25th, with excruciating pain in the rectum, aggravated at stool, and attended with copious hemorrhage. His countenance and lips are pallid; pulse feeble and quick: skin dry and hot; tongue furred. On making an examination I perceived four large internal piles prolapsed and tightly embraced by the sphincter, the fine integument around the anus raised in folds. Ordered him to go home, and to bed. I visited him at his house, and returned the prolapsed piles; in doing this it was necessary to make very firm and continued pressure. To be cupped over the sacrum, and on the perineum. One ounce of castor oil to be taken immediately. Hot fomentations to the anus.

Sept. 30th. Is in less pain; the bowels have acted twice; the piles are prolapsed; they were returned with greater facility than yesterday, and were less congested. Three grains of grey powder, and four of Dover's powder, to be taken at bed-time, and a teaspoonful of a purgative electuary in the morning. To continue the fomentations, and to return the piles should they be prolapsed at stool.

By observing the treatment directed, the acute symptoms soon subsided. I proposed removing the tumours by ligature, but being free from pain, he preferred waiting the chance of another attack. Ordered him to use soap and water externally night and morning, and to inject half a pint of cold water after each dejection.

Dec. By following the injunctions given him, he has been free from pain, but the tumours are occasionally protruded, and he has lost from time to time a small quantity of blood.

*Remarks.*—The above cases present different conditions of internal hemorrhoids, in all of which relief was afforded by medical treatment, without having recourse to any operative procedure. The causes producing the disease are apparent, and were chiefly due to want of exercise, maintaining the sitting position for too many hours, constipation with an overloaded state of the bowels, and other concomitants. When fæcal accumulations exist, it is little use attending to the local affection till they are expelled; but if there be much pain, hot fomentations should at once be applied. After the bowels have been thoroughly freed, they must be kept easy by various laxatives. As many patients suffering from these diseases are affected with flatulence, it is very advisable, after the subsidence of the acute symptoms, to prescribe a tonic and purgative conjoined, which will have the effect of correcting the debilitated condition of the stomach and intestines, and will also generally succeed in inducing a regular action of the bowels. In all cases of hemorrhoids, ablution night and morning affords great comfort, and is highly beneficial. In internal piles the injection of cold water, after the bowels have been moved, is an important point in the treatment of these affections; the advantage arising therefrom being,

first, washing away any irritating excretions, and, secondly, giving tone to the vessels of the part.

In the first of the above cases pain was the prominent symptom, and upon superficial considerations might have induced the belief that fissure of the anus was the cause of the suffering. He had violent pains at stool, but it was not of that sharp, smarting character felt at one spot as in the latter affection; he also had aching in the part, occurring at various periods of the day, and not following the act of defecation as in fissure, neither was there spasm of the sphincter ani. The amount of blood lost was trivial, and could have no constitutional effect; his countenance indicated great suffering. That constipation and its concomitants were the cause of the local disorder is evident from the absence of any other source to which to ascribe it, and the result of the treatment verified the conclusion.

The disease in J. S. was chiefly due to the effect of constipation, arising from the very common cause—want of proper exercise, and maintaining the sitting position a number of hours consecutively; biliary congestion had also been induced, and preceded the hemorrhoidal affection. Acting freely on the bowels in the first instance, mild mercurials for a short time, the injection of cold water, and afterwards the use of tonic and purgative medicines combined, so as to give tone and induce a regularity of action of the bowels, restored the patient to health.

The great constitutional effects arising from hemorrhoidal disease, attended with loss of blood, was forcibly marked in the case of A. A. There was the pallid countenance, the colourless lips and gums, the weak and fluttering pulse, the heart excited on the slightest cause, either mental or physical. Here, also, we find constipation the cause of the disease, the removal of which by enemata and laxatives, and afterwards having recourse to tonics, and paying due attention to the regular action of the bowels, had the effect of restoring her to health and comfort.

The case of R. R., presents features not exemplified in the preceding. Besides gain in the rectum and loss of blood, the piles were extended at stool, he was troubled with a constant mucous discharge, and was unable to retain the fæces, when making any exertion, in consequence of relaxation of the sphincter, the reverse of the condition of the muscle in external hemorrhoids, particularly if complicated with fissure, when a preternatural contraction of it exists. Irritation was propagated to the urinary organs; but one of the most important features was the fulness in the head and giddiness of which he complained, and involved some consideration with regard to treatment. From the latter circumstance, he had been advised not to have the hemorrhoidal disease interfered with. But this patient was not plethoric, nor was there any external evidence of cerebral congestion; therefore the symptoms were due to another cause, and examination of the urine revealed the source, arising from a morbid condition of

the blood, occasioned by the imperfect action of the several depurating organs, especially of the skin and kidneys. Having freely unloaded the bowels, and afterwards attending to keep them regular, and by inducing a healthy performance of the functions of the other abdominal organs, no evil followed the cessation of the hemorrhoidal flux; and it is evident, had he been able to lay up for a day or two, an operation would have entirely freed him of the disease, without the slightest fear of mischief occurring to the head; but while he pays strict attention to himself, and nothing of importance takes place to derange his general health, he will continue without other annoyance than the mucous discharge from the bowel soiling his linen.—*Lancet, Jan.* 14, 1854, *p.* 36.

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## 118.—ULCER OF RECTUM, TREATED BY SIMPLE INCISION.

By William Oliver Chalk, Esq.

[This patient, aged 31, states that he has suffered for many years from habitual constipation and hemorrhoids. But from June 1852, to March 1853, he seems to have suffered from a compound of all the symptoms of ulcer of the rectum and spasmodic stricture of the urethra. Enemata gave him the only, though but slight, relief. His sufferings appear to have been almost intolerable.]

He has lately obtained slight relief by sitting on a piece of cork, so made as to push up and support the anus; but his sufferings have become so insupportable, that, unless they are speedily mitigated, he must, he says, give up his occupation, which is that of watch-pallet making. His general health is bad; the digestive functions are much impaired; tongue covered with a thick buffy fur, and red at its point; there is great epigastrial tenderness; pulse 84, full and jerking; skin hot and dry, especially in the palms of the hands; he is often assailed with severe abdominal pains, nausea, loss of appetite, and occasional vomiting of undigested food when the pains in the rectum are violent. He is subject to severe headaches. A consideration of the local symptoms here narrated, led me to conclude that they were occasioned chiefly by an ulcer of the rectum, which there was no difficulty in discovering. It was situated near to the point and to the right of the coccyx, of irregular form, as near as one could estimate by the touch, the size of a shilling, and excruciatingly painful under the examination. The sphincter was very unyielding, and there was a deep fissure on the right side extending to the verge of the anus. It would occupy too much space in these columns to describe the local and general treatment that preceded the operation; it need only be said, that his health was greatly improved, and the ulcer slightly. On the 23rd of April, chloroform being previously administered without bringing the patient fully under its influence, an incision was made into the mucous membrane beyond the ulcer, and

carried through it and the fissure, in the manner recommended by Mr. Quain in his lectures, thus avoiding the more formidable proceeding of dividing the sphincter ani. A very small loss of blood ensued from the operation. The patient was directed to remain in bed, and an opiate draught to be taken at bedtime. On my visit the following day, at eleven o'clock a.m., I found him suffering severe pain, much excited, hot and feverish, complaining of headache, and possessed with the idea that the operation had proved abortive. I learned that about six o'clock a.m., his bowels were naturally and freely relieved with little pain (a small coagulum of blood having passed with the motion), and again at nine o'clock, but that time a large pile descended, and made its appearance at the right side of the anus; it was excessively tender, very tense, and of a livid red colour. This circumstance sufficiently explained the cause of his suffering. Some days elapsed before the effects of this accident were remedied, after which the success of the operation became manifest by the subsidence of all the distressing symptoms under which he had laboured so long. On the 13th of June I received a visit from my patient; his general appearance had greatly altered for the better; he said he had not been so well for years, and that he had resumed his occupation.

Were further testimony wanting than that already adduced by Mr. Quain of the thorough efficacy of simply dividing the mucous membrane for the cure of ulcers of the rectum, it would be afforded by the case narrated above, which was interesting from the more than usual severity of the accompanying symptoms, and its complication with hemorrhoids. The ulcer was larger than usual, and the reflex actions resulting therefrom complex and severe; the general health, too, was much deranged,—an unusual occurrence, according to Mr. Quain.

From the history of the case, it would seem that constipation and the continual loss of blood was the proximate cause of ulceration,—at all events, the indications of it, (viz., the "bearing down, aching, and smarting," &c.,) did not come on until after the hemorrhage had ceased, that event being marked by an accession of symptoms more especially referable to ulcer of the rectum. It is difficult, as Mr. Quain observes, to assign any reasonable cause for the periodicity in the cessation of pain after an evacuation observable in these cases. In this instance, it generally extended to five minutes only, and never exceeded ten; but whatever it may be, this peculiar symptom, apart from the rest, may almost be considered pathognomonic of the disease. With respect to the contraction of the sphincter ani, it must, I think, be conceded, that the conclusion arrived at by this gentleman is essentially correct, viz., that the condition of the muscle is no more the actual disease than the spasm of the orbicularis in strumous ophthalmia. Of the operation may be said that which can scarcely be affirmed of any other involving a corresponding amount of relief, that the subsequent inconvenience arising out of it is so trifling, as scarcely to be regarded by the patient, while the subsidence of extreme suffer-

ing is almost immediate. Henceforth, in all probability, the division of the sphincter ani for this disease will give place to the simpler and safer plan of incising the mucous membrane only; but if otherwise, it is sufficiently obvious, from the successful issue of the cases recorded, that, as a general rule, recourse should be had, in the first instance, to it, and not to the more serious proceeding of dividing the muscle.—*Medical Times and Gazette, Dec.* 10, 1853, *p.* 599.

## ORGANS OF URINE AND GENERATION.

### 119.—ON STRICTURE OF THE URETHRA, AND ITS TREATMENT BY DILATATION.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson still adheres to the opinion that the perineal section is only adapted to certain cases of obstinate stricture, and that these cases are the exception to the rule. He believes dilatation to be the most simple and efficacious plan, and, in this paper, he considers the kinds of cases in which dilatation may be most successful. He says:]

It is hardly necessary for me to remind you that permanent stricture of the urethra means a contraction or narrowing of the canal at some point, caused by change of structure, from inflammation or the healing of an ulcerated surface. The effects of inflammation, then, in giving rise to permanent changes of structure, are the immediate means by which the narrowing of the canal is produced; and to understand or appreciate the advantages of any mode of treatment it is obviously necessary for you to be acquainted with, and ever to bear in mind, the changes of the different tissues which accompany and give rise to stricture of the urethra. The changes now alluded to present great varieties in their seat and extent. They may be confined to the mucous lining of the urethra, or may implicate that membrane and the subjacent tissues at the same time. Sometimes the effects of inflammation are slight, though the difficulty of passing a bougie may have been great. The mucous membrane of the urethra is perhaps injected at certain points, thickened, and has lost its natural elasticity, In some cases, as Mr. Hancock has recently shown, the narrowing of the canal is produced by the deposit of an organised false membrane on the surface of the mucous lining. When the disease has lasted for any length of time, the morbid changes are seldom confined to the lining membrane of the urethra, but extend to the deeper-seated tissues. I shall now merely invite you to remember that as the inflammation extends to the sub-mucous cellular tissue, this structure becomes condensed, from the agglutination of its interstices by organised lymph; it is also more or less increased in bulk, and when the swelling with condensation has continued for any length of time, the

new tissue is converted into a dense, fibrous mass of great resisting power. In some cases it may be so callous and resisting that, on dividing it with the knife, a noise produced as if one were cutting through a portion of cartilage. This is particularly seen in cases where the inflammation has involved the spongy tissue surrounding the bulb of the urethra, when the whole mass may be found changed into a dense ligamentous substance, or into a "hardened callosity," in which no distinction of parts can be traced. The extent to which these changes occur vary in every individual case. Sometimes the chronic induration and thickening occupy the whole diameter of the urethra, and give rise to a circular contraction of its canal, the stricture appearing as if caused by a mere thread, or extending to half an inch or more of the circumference. In other cases this thickening is irregular and tortuous, or it may occupy only one part of the circumference of the canal. It is also important to remember that there may be several strictures at the same time, one or two occupying the anterior portions of the urethra, and a third seated at the point of union between the bulbous and membranous parts.

The symptoms of stricture are, generally speaking, sufficiently obvious, but I shall not dwell on them at present, as my object is to explain to you the principles on which dilatation should be conducted. Before we have recourse, however, to any method of treatment, it will be prudent to employ certain preliminary measures for the purpose of reducing any excess of irritation or inflammation that may exist. Unless this be done, the use of instruments may give rise to very unpleasant, if not dangerous symptoms; the cure will be greatly retarded, and the hopes of both surgeon and patient sorely disappointed. Having then subdued any inflammatory complications which may exist, your first care will be, by careful examination, to ascertain the seat, nature, and extent of the stricture—circumstances absolutely necessary to be known before you undertake any means whatsoever for its removal.

Various methods have been employed for making the preliminary exploration of the urethra now alluded to, and writers are by no means agreed on the best kind of instruments to be used. Sir C. Bell recommended a ball-headed probe for the purpose, but this instrument does not justify the favourable opinion of it formed by its author, and is now, I believe, entirely abandoned.

Dr. James Arnott invented a particular kind of exploring sound, which was afterwards adopted and modified by Ducamp. Dr. Gross employs a common silver catheter or a graduated bougie, the end of which is tipped with cobbler's wax. When the stricture is not very narrow, M. Civiale informs us that a small gum-elastic bougie covered with soft wax may sometimes be used with advantage, but he prefers for general use very soft wax bougies, with which, according to him, the most exact marks of the stricture can be obtained.

Dr. Bigelow, of the Haward University, United States, strongly

recommends gutta percha bougies for taking impressions of strictures. A middle-sized bougie of this kind, if gently heated, becomes quite soft; when rendered sufficiently soft, it is passed rapidly down to the stricture, carried forwards by gentle pressure, and then allowed to become firm; it gives when withdrawn a most accurate impression of of any inequalities existing on the surface of the urethra. Sir B. Brodie, on the other hand, prefers a full-sized cylindrical bougie made of plaster; this is to be softened by rubbing it with the hand, to be well oiled, and bent into the form of the urethra. For my own part, I believe that it is difficult to lay down any precise rules on this point. Some surgeons are accustomed to a particular kind of instrument, and cannot work with any others; some will select soft bougies, others again find it more easy to explore the urethra with a metallic instrument, and I am inclined to think that the examples we see depicted in books, of delicate impressions left on soft bougies by tight strictures, must be indebted to the artist's imagination for a considerable part of their accuracy. But whatever instrument we use, great caution must be employed during its introduction; and as the obstacles are the same, whether we have recourse to a bougie for the purpose of dilating or of exploring the urethra, I shall now describe to you the best method of passing an instrument into the bladder for the cure of stricture.

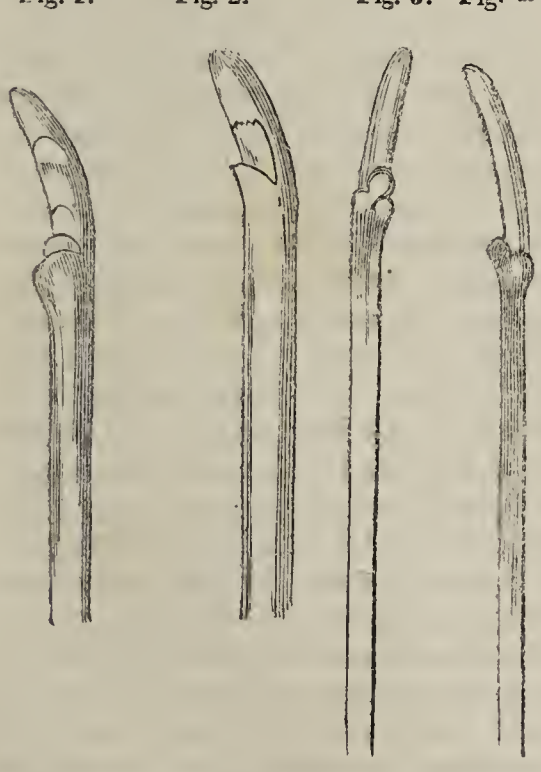



FIG. 1.—Mark left by a stricture at the curved part of the urethra.

FIG. 2.—Mark left by a stricture at the upper part of the membranous portion.

FIG. 3.—Mark of a ring stricture at the curve of the urethra.

FIG. 4.—Mark of another ring stricture at the same point.

*(Copied from Civiale.)*

The size, form, and composition of the instrument, will be determined by circumstances which I shall presently notice; I now desire to give you only a general idea of the operation. Having

selected a proper instrument, and placed the patient in a standing position against the wall, you seize the glans penis between the little and ring fingers of the left hand, uncover the glans, and draw the penis very gently forwards until it becomes nearly horizontal. The bougie must, I need hardly remind you, be well smeared with oil or some other greasy substance, and should then be passed with a gentle rotary motion till it reaches the prostate. If a sound is used, it should be held like a pen between the fingers; but there are different ways of directing the handle, while the point is being introduced into the meatus urinarius. Some turn the concavity of the instrument directly upwards towards the abdomen of the patient; some turn the concavity downwards; while others keep the handle close to the right groin of the patient, and pass the point on until it will go no further in this direction, after which the handle is brought horizontally forwards, and the instrument pushed with extreme caution and gentleness towards the bladder. When it arrives at the stricture, the sensation communicated to the hand by the obstacle will warn you to proceed with increased prudence; you must, nevertheless, push gently forwards; and in ordinary circumstances, the obstacle being overcome, the point of the instrument passes onwards into the bladder. The passage of the instrument may be impeded by several obstacles, a notice of which becomes necessary. It would be a serious error to conclude that organic stricture of the urethra exists merely because the instrument does not go on readily into the bladder, but appears to be arrested at a particular part of the canal. You have to consider whether the obstacle is one of your own making, whether it depends on the form and kind of instrument you employ, or whether it is caused by the narrowness of the stricture itself. The point of the instrument may become entangled in one of the lacunæ, or in some accidental fold of the urethra; its onward progress may be arrested by spasmodic contraction of the urethra or surrounding muscles, and impediment from this cause is of very frequent occurrence. Again, if you use a bougie which is very small and soft, it may itch and bend against the lower surface of the urethra, and thus give rise to the notion of a stricture existing where none, perhaps, is present; indeed, this is sometimes an insurmountable obstacle to the use of soft bougies. It is evident that the greatest difficulty which you may have to encounter will arise from the nature of the stricture itself. Some conception of this, I presume, has been obtained by the preliminary examination, which will have revealed the precise seat of the stricture and given some general, if not more accurate idea of whether it be narrow, tortuous, &c. In cases of old narrow stricture, where the urine only passes drop by drop, and you have every reason to think that the canal is not only much reduced in calibre, but tortuous, soft bougies of a small size must be tried at first. Some surgeons recommend a fine catgut bougie; others a very small gum catheter, sufficiently curved, but without the wire. These instruments are apt to

become soft and yield; but a dexterous hand will generally distinguish between the obstacle produced by narrowing of the canal, and that caused by the resilience of an elastic instrument, which bends without entering the stricture. Should it be found impossible to introduce a soft instrument, recourse must be had to a metallic one, the curve of which is smaller than that of ordinary catheters. In some cases, the obstacle to the passage of the instrument evidently arises from a vital action of the contracted part; and here many excellent surgeons have given the precept, that the point of a large bougie should be gently pressed for some time against the anterior surface of the stricture, which gradually yields. It has been supposed that the pressure of the instrument alters the sensibility of the canal, and relieves the state of spasm which has been superadded to the organic disease. However this may be, the practice is good, and often succeeds when other means fail. M. Civiale even carries the principle further. In very difficult cases, he recommends us to pass down daily to the stricture a bougie of large calibre, and leave it in contact with the contraction for some time. When the sensibility of the part has been thus diminished, he takes a conical gum-elastic bougie, and having introduced its fine point into the orifice, he presses it gently forwards, continuing the pressure if necessary for several hours. The chief point is to know whether the bougie has entered the stricture, or is merely pressing against the walls of the urethra, and this is ascertained by drawing the instrument slightly back; if it has entered the stricture, we feel some resistance to withdrawing it, which shows that it has been grasped by a contracted orifice. When the stricture is long, callous, and resisting, the bougie may cease to advance, after having penetrated for a certain distance into the orifice. It is now useless to go on, for the instrument will merely curve in the part outside the stricture. When this occurs the bougie should be withdrawn, and a larger one passed in, and even if it make little progress the marks left on it will furnish additional information relative to the nature and degree of the contraction,—two very important guides for our future conduct.

The instruments employed in the treatment of stricture by dilatation are of two kinds, and of numerous forms. Some are soft, being composed of wax, gum-elastic, gutta percha, or plaster. The plaster bougie is a composition of diachylon, wax, and oil, mixed in such proportions that it is pretty hard when cold, but becomes soft when warmed. Some instruments are hard, or perhaps it would be better to say "firm." These are made of catgut, silver, composition, metal, &c. A great deal has been said for and against these different kinds, some surgeons preferring one kind and some another; but it is impossible to lay down any universal rule, and say plaster bougies are better than metallic sounds, or *vice versâ*. The nature of each case must in a great measure influence your choice of an instrument. Some general remarks, however, may be useful. Whalebone bougies are now entirely abandoned, and catgut bougies nearly so. The latter

are rough, and very liable to wound the surface of the urethra, or even make false passages. The common plaster bougies are not easily introduced; because, as I have said, they become soft, and are apt to stick in the urethra. They take no mark of the stricture; yet they must be employed in cases where the contracted parts are tortuous and of small calibre. Mr. Liston, however, rejected soft bougies altogether, because "there is no possibility of guiding their points, or ascertaining what direction they take." When the stricture was moderate he employed a plated metal sound; and when very tight, he used a small silver catheter. In my own practice I generally prefer metallic sounds, but I am far from asserting that there are no cases in which soft bougies may be used with advantage. Mr. Lawrence is another high authority in favour of metallic sounds: with them, he says, "We obtain a much greater power than with the flexible plaster bougies; from their smoothness they pass much easier along the urethra; and, from their unyielding nature, we obtain a much greater power of guiding the point of the instrument, and of determining its general direction." These are essential advantages in certain severe cases, where some degree of force must be employed and where the surgeon must be guided by his anatomical knowledge.

The forms of instruments employed for dilating a stricture are various, but may be reduced to the conical, the cylindrical, and the fusiform.

[The rule in cases of stricture is to introduce a bougie the same size as the stream of the urine. Mr. Coulson objects to the conical and fusiform bougie, and prefers the cylindrical. He proceeds:]

The word dilatation has been applied to the mode of treatment of which we now speak; but it does not accurately describe the effects produced, or intended to be produced, by the passage of instruments through a contracted portion of the urethra. You must remember what I have said relative to the organic changes which accompany permanent stricture. The canal is not simply diminished at a particular point by muscular contraction; if this were the case, dilatation, properly so-called, might be expected to effect a cure in a speedy manner, but the effect cannot be regarded as purely mechanical. The passage of the instrument modifies the vital properties of the part, while the pressure which it exercises on the newly-organized products of inflammation induces a tendency to absorption, and gives a stimulus which enables nature to complete the cure. The vital effects of the bougie, if I may so call them, are in fact visible from the commencement of the treatment. They often excite pain, or some hemorrhage which relieves congestion, and almost always produce more or less secretion from the mucous membrane of the urethra, which in many cases amounts to an actual running. Besides this, we know that a slight degree of pressure is sufficient to cause absorption of newly-organized parts, and that the absorption, once commenced, goes on

even when the pressure has been removed. But whatever the theory may be, the results of the practice are certain; and long experience has demonstrated that, with certain exceptions, dilatation is the most safe and effectual method of relieving the distressing accidents which attend stricture of the urethra. It is not to be indiscriminately used; for there are many cases of old stricture in which it will assuredly fail, nor is the mode of dilatation a matter of indifference. Let me explain what I mean by the mode of dilating. This may be conducted on different principles. The dilatation may be temporary or it may be permanent, and again, temporary dilatation may be had recourse to in a gradual or in a rapid manner. Let me first describe the operative proceedings in each of these methods, after which I will consider their relative advantages, the cases to which they are applicable, and in general the advantages and disadvantages of the treatment of stricture by dilatation.

The size of the instrument, whether it be a plaster bougie or a metallic sound, must be regarded by the presumed diameter and nature of the contraction. Having introduced it in the manner described, it is to be allowed to remain in the canal for a certain time, then withdrawn and reintroduced at stated intervals—points which must be regulated by the circumstances of each case. The object is to effect a regular and progressive dilatation of the strictured part without inflicting any injury on the tissues, or exciting any severe degree of irritation in the urethra or bladder. On the first introduction of the instrument, it ought not to remain more than a few minutes in the urethra; if it has been borne well, it may be introduced again on the following day, and so on; but the best practice is to pass the bougie every third day only at first, and then to increase in a gradual manner the size of the instrument, while the intervals between each operation are shortened. All this, however, and the time during which the instrument is allowed to remain in the urethra will be regulated according to the effects produced on the stream of the urine, which indicate the changes gradually taking place in the calibre of the urethra, and its return to a healthy condition. It is not pretended that the diameter of the canal is always to be brought back by dilatation to its normal extent; but when the patient is able to pass his urine freely, when the urine is healthy, and when no tendency to a return of the contracted state manifests itself, then you may consider the patient cured, and cease the use of instruments. In ordinary cases this will require from a month to six weeks, perhaps longer.

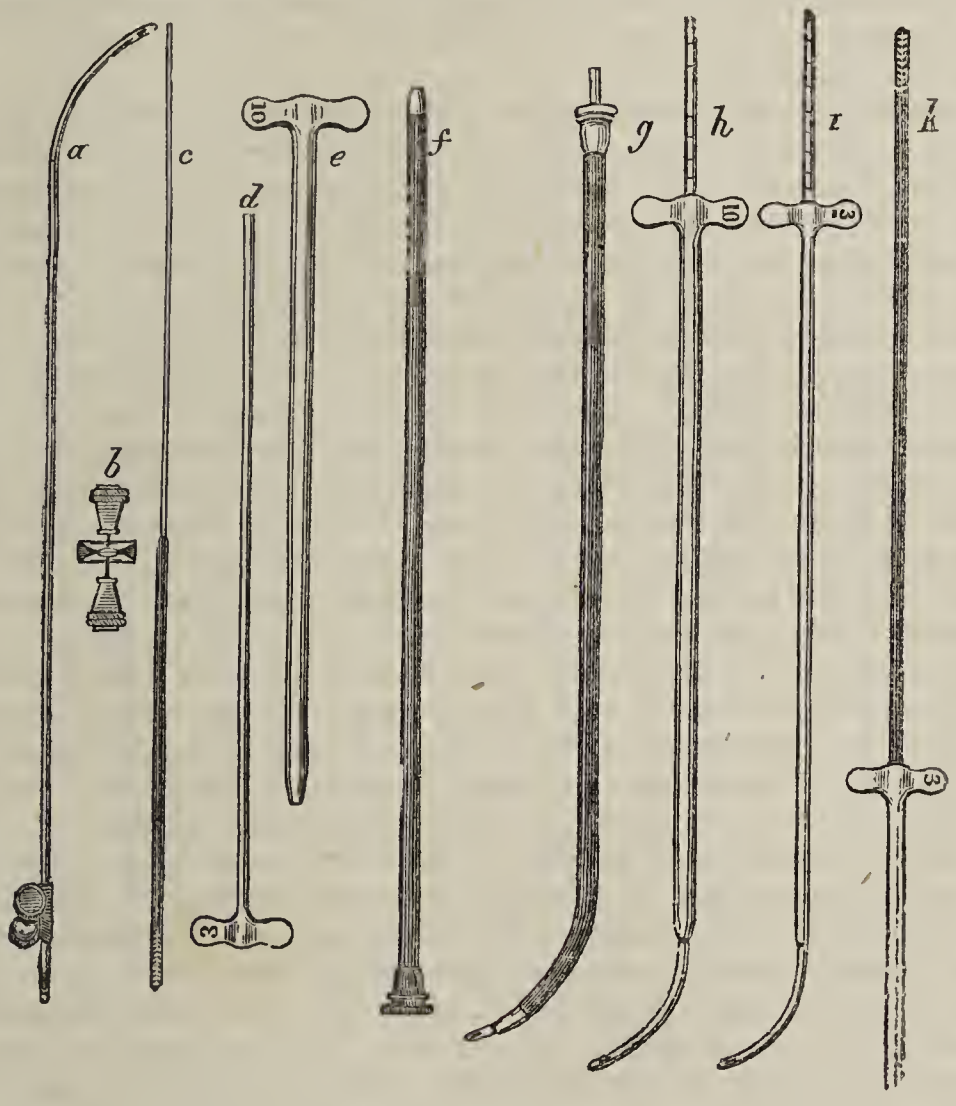
Though safe and certain, this is a very tedious method, and hence many surgeons have attempted to abridge the duration of the treatment by effecting dilatation of the canal in a more rapid manner. This is done by introducing at first a small instrument in the usual way, then withdrawing it, and passing in quick succession two or three instruments of a larger size, until the patient begins to complain of

uneasiness or pain. The same operation is repeated in a day or two, higher numbers being gradually employed, and in this way very obstinate strictures have been cured in five or six days.

Permanent dilatation, as its name implies, is effected by leaving the instrument permanently in the bladder. Some surgeons commence with the gum-elastic catheter, but as the cases to which this method is generally applied are difficult, I believe it will be better to employ a metallic instrument in the first instance. This may be allowed to remain in the bladder from twenty-four to forty-eight hours; it is then withdrawn, and a gum-elastic catheter is substituted for it. When this instrument has been safely passed into the bladder, the stylet is withdrawn, the mouth of the instrument closed with a plug, and the catheter is secured in its place by a proper bandage. According to the effects produced, the gum-elastic catheter is allowed to remain for a longer or shorter period in the bladder before it is removed. Some leave it in for three or four days only. Other surgeons who fear the consequences of too rapid dilatation leave it in for six or eight days. Whichever course you may pursue, the instrument, after the period selected, is withdrawn for twelve hours, and one of larger calibre substituted for it. This is withdrawn in its turn after a few days, a still larger catheter employed, and the operation repeated until the calibre of the structure is dilated to its natural size. But this and the ordinary modes of dilating strictures by the successive introduction of instruments, the calibre, or to use the technical word "number," of which is gradually increased, obviously involves the necessity of withdrawing one instrument before another of larger size can be introduced. Now this is often a very great disadvantage. In certain cases, the surgeon frequently experiences almost insurmountable difficulty in the introduction of an instrument, and when with great patience, skill, and labour he has succeeded, no sooner is the sound introduced than it is withdrawn. This must be frequently done during the course of the treatment, and if the stricture be tight, or any considerable tendency to spasmodic action exist, it may be impossible to pass in the original instrument, much less a larger one. In all our actions it is a great point to retain possession of any advantage once gained, and it is highly important in the treatment of stricture to "keep the command of the urethra when once pervious." To attain this desirable object, Mr. Thomas Wakley has invented several ingenious instruments, the utility of which has been demonstrated by very extensive practical application. Here are Mr. Wakley's instruments, (See '*Braithwaite's Retrospect*,' vol. xxiii, p. 232, for a full description of the instruments by Mr. Wakley.) They are intended to ensure, as I have said, entire command over the pervious urethra; and they present this additional novelty, that in their effects they combine two methods of treatment commonly employed—viz., rapid and permanent dilatation of the stricture.

Mr. Wakley's instruments are simple, and easily understood. They

consist of a small silver catheter No. 2, of the ordinary size, which is introduced into the bladder with the usual precautions. A steel index-rod is then screwed on the end of the catheter, and the com-




(*a.*) The catheter and thumb-slide.
(*b.*) The thumb-slide.
(*c.*) The steel rod. The rod and catheter combined make the index-rod.
(*d* & *e.*) The silver tubes.
(*f.*) The elastic tube.
(*g.*) The elastic tube running over the directing-catheter.
(*h* & *i.*) Silver tubes running over the director.
(*k.*) The upper part of *h* & *i*,—the steel-rod.

bined instrument forms what Mr. Wakley calls his "index-rod," which serves as a director for the silver and elastic tubes. The silver tubes are eight in number, of graduated sizes, corresponding to the ordinary bougie. They are about nine inches long, straight, of a conical shape at their distal extremities, and accurately fitted to the surface of the index-rod, along which they glide with perfect ease. The elastic tubes are composed of a flexible metal, covered with a gum-elastic fabric.

They are of the same size and shape as the silver tubes, and are passed into the bladder over the directing-catheter, which is then withdrawn. When it is necessary to repeat the dilatation, the index-rod is passed into the bladder through the elastic tube, which is then withdrawn, and the silver tubes introduced along the guide in the manner already noticed.

From this brief description you will perceive that permanent dilatation is effected by means of the flexible catheter; while the different sizes of the metal tubes, which are safely guided along the index-rod, enable the surgeon to regulate the degree and rapidity of dilatation according as he may think judicious. From the cases published by Mr. T. Wakley, it would appear that he sometimes introduced his metallic tubes rapidly one after the other up to No. 7, and that he is not in the habit of leaving the elastic tube, on the first introduction, for more than half an hour or so in the bladder. Those who are acquainted with the difficulties which often beset the surgeon during the treatment of stricture must confess that the principle on which Mr. Wakley's instruments act is one of deep importance, and that great credit is due to him for the ingenious and perfect manner in which he has attained the desired object. Mr. Wakley has now treated a very great number of cases of stricture with his instruments, and he states that the results have been of the most gratifying description. That the guide-tube must greatly facilitate the introduction of dilating instruments, I have no doubt; but I am not quite so certain that the necessity of always keeping an instrument in the bladder may not occasionally give rise to unpleasant effects.

It may now be useful to say a few words on the kind of cases to which the treatment by dilatation is more particularly applicable. Temporary dilatation is not only the oldest, but the best of all methods; it is likewise the one most generally employed; yet it were absurd, in my opinion, to assert that it should be applied indiscriminately in all cases and to every species of stricture. It is well suited for recent cases not accompanied by considerable change of structure, and also for those in which more rapid dilatation produces unfavourable symptoms. Many cases of old and hard stricture will also yield to the metallic sound, whereas the bougie produces little or no effect on them. Rapid dilatation may be attempted in cases where the stricture yields readily, or when it is a matter of great consequence to the patient to obtain a speedy cure. But although it is certain that rapid and effectual cures have been obtained by quickly increasing the size of the instruments employed, and by introducing them in quick succession, yet I cannot too strongly caution you on the necessity of prudence whenever this method is adopted, and of watching the case with the utmost care during the whole period of treatment. The urethra often resents these attempts to dilate it in a hasty manner, and a very slight increase in the size of the instrument may cause a reaction, which will continue with obstinacy until we cease the use of

instruments altogether. This is seen every day in practice, and surgeons are well aware that any imprudent attempt at forcible dilatation may be followed by severe inflammation of the urethra, or perhaps retention of urine, with fever, nervous symptoms, and other disagreeable consequences. Permanent dilatation is a very efficient method in most cases of bad stricture, where the urethra is dense and resisting, or the canal rendered tortuous by chronic inflammation. It should also be preferred in those anomalous cases where the contact of an instrument with the neck of the bladder produces on each occasion severe shiverings and nervous disturbance of a serious character. On the other hand, there are undoubtedly cases which will not yield to any form of dilatation, but are rather aggravated by it; there are some in which dilatation is plainly contra-indicated; there are some in which no rational hope can exist of our being able to relieve, much less cure the disease by bougies or sounds. I have, however, fully considered these points in a former lecture, and shall now conclude with some remarks on the advantages and disadvantages of dilatation.

Although this method of treatment has stood the test of time—and this is a strong presumption in its favour—many objections have been advanced against it. In the first place it has been objected that there are strictures through which a bougie cannot be passed. This is perfectly true; I cannot concur in the opinion that no such thing as an impermeable stricture exists; still I believe that with caution and perseverance an instrument can almost always be passed. There are, however, strictures which cannot be overcome without the certainty of making a false passage; here dilatation should not be employed, and such cases necessarily limit its field of application. To dilatation it is also objected that the surgeon can never be sure of being able to re-introduce any instrument after it has been once withdrawn. This is also true, but the disadvantage has been remedied by the excellent instruments of Mr. Thomas Wakley, of which I have already spoken. Dilatation sometimes produces inflammatory and nervous accidents of a disagreeable nature. This cannot be denied; but I maintain that it is much less likely to excite such disorders than any other mode of treatment, and that the objection holds good against rapid, not against gradual and methodic dilatation of the urethra. The treatment by dilatation is inapplicable to cases of old, callous, or very contractile stricture. This I admit, and would reserve such cases for other modes of treatment. The process is a long and tedious one, and the necessity of confinement or repose is a great inconvenience. Temporary dilatation unquestionably is a slow process; but if it be slow it is safe, and probably as sure as any other method. Unless the case be a severe one, no great repose is necessary, for every surgeon in extensive practice knows that the great majority of his cases of stricture are in persons who follow their usual avocations. Finally, it has been urged that the cure by dilatation is only palliative; the contraction has been removed for a time; it soon returns. This objection,

I fear, will equally apply to any other method which may be employed. After the cure of stricture, whether by bougies, caustics, or incisions, a certain tendency to contraction often remains, and it will always be prudent to continue from time to time the occasional use of an instrument long after the disease has been apparently cured. This is an imperfection attached to every method hitherto adopted, and I cannot perceive that it affects dilatation more than any other.

The advantages of dilatation, if we admit its efficacy, are obvious. It is safe, painless, and easily managed, being under the control of the operator, and capable of being suspended at any given moment, should unfavourable symptoms set in. By temporary dilatation we avoid the danger of making false passages, or producing retention of urine—accidents which so often follow the use of caustics, or permanent dilatation. The vital contractility of the urethra is better restored by this method than by any other, and it possesses the great advantage of enabling us to ascertain step by step the progress which is being made towards a cure.—*Lancet, Dec.* 24, 1853, *p.* 593.

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## 120.—NATURE AND TREATMENT OF SPERMATORRHŒA.

By John L. Milton, Esq.

Spermatorrhœa admits of a very natural division into—1. Night Discharges; 2. Day and Night Discharges; and 3. Imperfect Secretion of Semen.

1. *Night Discharges.*—These constitute the mildest form of the complaint, and are, as is well known, a common result of seminal plethora; they seldom require much treatment, unless in excess, or when complicated with gleet, stricture, or discharges in the day-time.

2. *Night and Day Discharges*—a more advanced grade, and in their worst form often bordering on the third clas.. The urethra is then red and highly irritable, and the health severely impaired; but happily for the patient both varieties are for the most part easily curable.

3. *Imperfect Secretion of Semen*—the most severe of all, and necessarily accompanied by temporary impotence. Instead of properly eliminated, healthy, consistent semen, a thin, rank fluid, unaccompanied by almost any signs of erection of the penis, is thrown off under the influence of the slightest excitement. Intense irritability of the urethra, and a marked dread of examination, usually complicate this form.

There is a variety of the disease which is generally considered as spermatorrhœa, and with which most surgeons are familiar: I mean the discharge after stool of large quantities of glairy, tenacious fluid, supposed to be the contents of the seminal vesicles. Now, I very much doubt if this be an evacuation of semen: great part of it, I suspect, comes from the prostate; and in my work on Gonorrhœa (p.

101), I adverted to the cure of a case of this kind as being probably an instance of prostatic gleet. Even if it comes from the seminal vesicles, which from the quantity emitted seems almost impossible, I should scarcely be disposed to admit it to be a discharge of semen, for I have not been able to satisfy myself that these receptacles receive the superabundant secretions of the testicle; but whatever it be, it demands our urgent attention, in order as well to allay the patient's uneasiness about so disagreeable a symptom, as also to leave no chance for the germs of any disease to ripen.

*Complications.*—It is almost superfluous to say, that all complications require immediate removal. Gonorrhœa and stricture have their appropriate remedies, upon which I shall not touch. It has, however, been asserted that spermatorrhœa may depend upon fissures in the anus, ascarides, &c. To which I reply, that I have strong doubts about the fact; but as these causes would require removing for their own sake, it is obvious that the treatment must be much the same. I must, however, demur to M. Lellemand's plan of excising the prepuce in every case where accumulations of sebaceous matter behind it coincide with spermatorrhœa. Where there is also contraction of the perpuce, so that the glans cannot be uncovered without pain; or where a firm, constricting ring has formed underneath the mucous membrane, I grant that the remedy is circumcision; but where the prepuce passes freely over the glans, plenty of soap and water every morning, and the use of zinc or tannin, in the form of a lotion, will almost always effect a cure.

When circumcision is imperatively called for I have found it best to slit up the skin and mucous membrane to the reflection of the latter, and then to cut away the frænum as far as I could. The constricted part, which is mostly near the edge, is removed in a circle, and the bleeding being stopped, the skin and mucous membrane are brought together by several fine stitches, and the intervening spaces may be covered with collodion. Of all the operations I have seen this leaves the neatest prepuce.

1. *Treatment of Night Discharges.*—Even in cases where it might be supposed, from the healthy frame of the patient, that tonics are not called for, it will often be found that quinine will stop these discharges. Hunter says, "the idea that has been formed of the disease leads to the practice generally recommended, such as giving strengthening medicines of all kinds, but I never saw any good effects from any of them, and I should rather be inclined to take up the soothing plan to prevent all violent actions, and keeping the body open will in some degree moderate the discharge, and may probably effect a cure in the end."—(On the Venereal, p. 304.)

Yet there can be little doubt, I think, in the minds of those who have given it a fair trial, that quinine does assist powerfully in controlling spermatorrhœa, especially in those cases where physical weakness is the predominant symptom. I willingly admit that in others its

good effects are not so marked; that where the tongue is foul, and there is a good deal of irritability, headache, and dyspepsia, with costiveness, it is more necessary to subdue these symptoms by mild aperients, sedatives, &c., than to give any tonic, however useful in other conditions. M. Lallemand has urged against it, that it produces considerable irritation, but I apprehend this mostly arises either from unsuitable cases being chosen, or from giving too large doses.

When violent or painful erections arise from the irritation occasioned by the presence of, or remaining after, gonorrhœa, the spirit of camphor will generally at once relieve them. A teaspoonful in a little water is the dose. The patient should place all his apparatus in readiness by his bed-side, and as soon as he is awakened by an erection should rise and take a dose. If the erections come on as soon as he lies down, he had better take a dose before going to bed.

Few means of controlling spermatorrhœa could be devised so simple and natural as exercise, especially gymnastics, which the common experience of mankind has extolled from the most distant times. Every abnormal action is marked by a failure of vital power at one or more parts of the frame, and an accumulation of it in the suffering organs. The generative power, animal life, and cerebral development, antagonize each other; and sedulous attention to train the two latter to the highest degree of activity they are capable of, will rarely fail to subdue anything short of excessive action in the generative system, and bring the performance of this valuable function under the mild and healthful sway of reason.

True physiology will always conduct us to the same goal as experience founded on correct observation. Hence every writer who has attentively watched this disease has strenuously insisted on the necessity for gymnastic exercise. But owing to the iniquitously late hours kept up in many London houses, it is impossible to resort to this remedy. It is useless to talk of the advantages of boating, cricketing, &c., to young men pent up in shops and warehouses till ten or eleven o'clock at night. Thus, like the baths, douches, mattrasses, &c., which are recommended, they are liable to one grave objection, that of being inapplicable in nine cases out of ten, and to make true progress in treatment our main object must be to find out remedies *suitable for every case*..

Accordingly, I have long accustomed myself to rely principally on morning exercise, as the question then becomes one rather of conformity than of ability on the patient's part, and if he be really determined to save himself from the results of his own indiscretion he may do half the surgeon's work if he will rise at five or six o'clock, sponge with cold salt water, use the dumb bells for half an hour, and follow this up with a brisk walk. It will not be long before the eye grows brighter, and the skin clearer; before he sleeps sounder and again feels comfort in existence.

Dr. Carpenter recommends his readers as a preventive to try the

effects of close mental application. The frantic acts of self-mutilation performed by devotees, show that the most absorbing study will not suffice to quench entirely a natural passion. But this is not the only objection to the plan. In the greater number of bad cases, I believe it is useless to inculcate study; the depression and irritation are too great to allow the attempt to succeed, and with all the good will possible, most of these patients cannot make a beginning till their physical condition is somewhat improved. I therefore advise those who have time to spare, to begin study by reading *aloud* for an hour every night, and then to go out as much as they can into society—a plan from which I have seen better results than from attempting to impose on an exhausted brain a task it cannot possibly execute.

But should all this fail to remove the disease—should it persist from habit, as it is called, but which is nothing more than the result of our inability to cope with the diseased action, perhaps no remedy will act more quickly and surely than a blister. Notwithstanding the the strong opinion M. Lallemand has pronounced on the subject, I have no hesitation in asserting, after the numerous trials I have given it, that if some proper medium, as blistering tissue, &c., be used, no strangury or "exasperation effrayante" of the spermatorrhœa need ever be feared.

2. *Night and Day Discharges.*—Here we have rather a more serious affair to deal with, though the greater part even of these more severe cases will yield to a persevering use of the remedies already spoken of. Where, however, these are inapplicable, as, for instance, in cases complicated with severe indigestion, or a high degree of nervous excitement, with severe pain in the urethra, or excessive sensibility in this canal, or when imperfect secretion of semen has begun to show itself, we must have recourse to further means.

Among these we may safely rank *opium*. Under its use the secretions become thicker, and less pain is occasioned by their being thrown off, as if at one and the same time it blunted the sensibility and checked the secretion of the watery and irritating elements. And besides all this, it is not too much to say, that opium is a tonic both to the exhausted frame and irritated mind. Where there is a frequent desire to pass urine, and in cases marked by excessive watery secretions from the Schneiderian membrane, aggravated by cold easterly winds, opium often effects a most beneficial change.

It may be objected that it tends to produce constipation, destroy the appetite, and favour congestion of the brain; but the two latter seldom if ever result when it is used, as it requires to be, in moderation, and at intervals. The constipation also is not an unmixed evil, for in some of these cases there is considerable irritability of the rectum.

In this variety of spermatorrhœa also, few patients are met with who are not benefited at some period of the treatment by quinine. Where the patient is very pale and nervous, and where there is any

tendency to spasmodic stricture, the tincture of muriate of iron may be given, and so far as I can judge, this, and some of the chalybeate waters, are the only forms in which steel is, if not injurious, at least not useless.

In some cases the patient complains of a foul tongue and thirst, with nausea and lassitude; the urine is turbid, and the stomach disordered; or the stools occasion smarting and heat at the anus. Sometimes he is harrassed by a cough, and a good deal of mucus is expectorated. These symptoms indicate a disordered state, which is often instrumental in keeping up the spermatorrhœa, without having been perhaps the primary cause. In such cases I have used the nitrate of potass with success.

After the statements M. Lallemand has made respecting this salt, I could not well pass over his views. He says that nearly all those who took squill, nitrate of potass and digitalis, observed a marked exacerbation of the seminal discharges, (*une augmentation notable des pertes séminales*), and that the nitrate proved injurious in every instance—an opinion founded upon forty cases, he says, some of which were certainly lamentable enough.

But to what was this due? M. Lallemand has left us perfectly in the dark as to the dose, the most important point of all. In one case only can we arrive at any estimate, and here we are briefly informed that an ounce was taken in three days. No one who has seen the irritability of the bladder and kidneys produced by nitrate of potash, or any strong diuretic salt, in gonorrhœa, will be much surprised to learn that such needless overdosing brought on a "notable augmentation" of the symptoms.

When constipation is much complained of, and the patient has in vain taken large quantities of medicine to overcome it, I would venture to advise the surgeon to desist from any attempts to remove it by drastic purgatives, &c. Not that I at all deny the injurious effects of costiveness, if not on the health, at least on the mind of the patient, whose anxiety is always kept alive so long as this costiveness is followed by a mucous discharge, but that I think the irritation and exhaustion occasioned by repeated purging are even more injurious, and that we may effect the same purpose by less hurtful means.

The remedies I have to suggest may not perhaps meet with the approbation of my readers. I generally trust a good deal to time and improvement of the health, or, when the costiveness is very obstinate, recommend the patient to take a pill of gentian and a small quantity, as the one-twelfth of a grain, of strychnia, with a tumbler of unsweetened gin and hot water at night, and one of cold water in the morning. Even when the constipation has become so extreme that the patient has not had a stool more than once in nine or ten days, a little perseverance in this plan has soon restored the functions of the intestines.

Nitric or nitro-muriatic acid may be given when there is much irritability of the bladder or scalding. If the patient complains of

spasmodic pain at the neck of the bladder, and we find the urine loaded with lithates or clouded with mucus, these acids along with laudanum, may be exhibited in decoction of pareira brava or chimaphila. Occasionally he describes an annoying pain at the epididymis, which sometimes shifts to the vicinity of the prostate, or he is tormented by a sensation like that of a worm creeping along the urethra or vas deferens. Sometimes the uneasiness is indefinable, but not the less disagreeable. Strong veratria ointment, or some mild counter-irritant, will generally succeed in subduing these symptoms, which, however, now and then linger on for a long time.

The high reputation which M. Lallemand most deservedly gained by his work on spermatorrhœa, and the writings of Mr. Phillips and Mr. Curling, have attached to the "caustic holder" an amount of prestige, which, however well merited, has, I think, had the effect of retarding improvement in the treatment of this disease by other means. So far from denying that it is both a safe and a valuable remedy, I never hesitate in certain cases to avail myself of it; what I object to is, that so many surgeons look to it as *the remedy*, while, in truth, it is not very often called for. It has been engraved, described, and commented upon, till an impression has arisen that it is an unfailing but very formidable remedy, whereas it has not only occasionally failed in the hands of Phillips, Curling, Acton, and others, but also in those of its great inventor. "Cauterization," says M. Lallemand, "is most useful in spermatorrhœa from menorrhagia, venereal or non-venereal, and often useful in atony; it is not of much value in cases of irritation, but even here it may aid by modifying the tissues." Mr. Phillips, in the answers he was kind enough to send to some queries I laid before him, says that "it has not only often failed to effect a cure, but even to relieve spermatorrhœa;" and Mr. Curling, in a communication he favoured me with, says, "Cauterization is not an infallible remedy. Some cases are too aggravated or too well established readily to admit of cure by any treatment. Many circumstances tend to counteract the beneficial effects of the caustic, such as want of self-control to check bad habits and the thoughts dwelling on impure subjects, occupations and modes of living detrimental to health, &c." But again he says, "cauterization has rarely failed to give more or less relief."

Of its safety there can be no doubt when it is properly employed. Lallemand used it for twenty years, and even cauterized the lower part of the bladder, without any untoward result; and Mr. Acton, commenting upon this statement, says he can fully bear it out. Mr. Curling says, "in no instance has any harm resulted from the application of the caustic;" and Mr. Phillips, in one of his answers to me, says it has never produced injurious results in his hands, though his experience extends over many hundred cases.

We might suppose that some part of this was owing to the excellent surgery of those who employed it. M. Lallemand does not allow the

caustic to remain an instant longer in contact than is absolutely necessary. "I cannot," he says, "protest too strongly against those who give a fixed period (une durée quelconque) for the action of the caustic, and measure it off by the watch. *Even to look at the dial takes too long a time.*" And Mr. Curling attributes the absence of severe symptoms in the cases where he has used it to his having applied it still more gently. But Mr. Phillips, though he has seen some discomfort caused by it, has rarely heard of any complaint on the patient's part; the pain on passing the urine is "very bearable," although he uses the caustic *very freely*. "I have never applied," he says, "too much caustic, but I have more than once failed by using too little." Had any severe symptoms occurred, Mr. Phillips would, we may rest assured, neither have overlooked nor suppressed the mention of them. All that is left us is frankly to admit that in his cases no harm resulted from the application of the caustic. M. Lallemand, however, has seen severe retention of urine, hemorrhage, intense pains, which only yielded after a long time, and it seems that stricture has also followed. I have myself seen cases where intense and long-continued suffering ensued, without any amendment in the patient's condition.

Want of success in some cases, the urgent objections raised by some patients to the introduction of instruments, and the decided benefit which has followed from an opposite plan, have induced me to think that it is better, first by every means in our power, to strengthen the frame, and diminish all local and general irritability before resorting to the use of caustic.

A large opium plaster to the loins will generally allay the aching pain so much complained of; I have often added a scruple of camphor to the plaster, without being able to give any good reason for so doing beyond the beneficial effect which resulted from it.

The chief remedy in cases complicated with gleet, severe pain, and purulent discharge from the posterior part of the urethra, and when cauterization has failed, is blistering, which is even more called for than in the other forms of the disease. It very frequently not only relieves the seminal discharges, but it relieves the cause, and I know of no other remedy which does both at the same time.

In every diseased action there appears to be increased vital action at the parts attacked; and as all the functions demand the presence of a certain amount of vital power for their due performance, there is a constant tendency to restore the balance deranged by disease. In chronic disorder the strain on the economy seems too slight to rouse up any violent action in the other parts, and we can only effect a cure by irritants, which carry the vital action so high, that when the rebound takes place it reverts to the normal state; like a bent spring, which, when bent still further, straightens itself by the recoil.

Along with blistering I have sometimes used injections of nitrate of silver to any part of the urethra which seemed diseased, employing a

syringe with a button at either end of the part perforated for the passage of the injections. By this means the urethra is kept sufficiently on the stretch to admit of the injection penetrating into every nook of the diseased part, while the buttons prevent its escape. The injection ought to be allowed to remain in contact till the nitrate is decomposed, so that the anterior part of the urethra may not be affected by it.

The highly sensitive state of the urethra, which makes these patients shrink instinctively from the approach of an instrument, appears to be caused by, not to be the cause of spermatorrhœa; and Dr. Tyler Smith has given us a satisfactory reason why the frequent presence of a crude fluid in a canal, which nature only intended to traverse it occasionally and in a consistent state, produces inflammation. Those who upheld an opposite view thought to find a convincing argument in the results which follow cauterization; but one gentleman who was appealed to proved rather too much, for, finding his patients suffer severely from cauterization, he gave them injections of nitrate of silver to use, which also cured them; and "a well-known and experienced Scottish surgeon observed that, when cauterization of the urethra failed, he had applied the *cautery* to the external orifice of the urethra *with more decided advantage.*

I presume the truth is, that the source of suffering is the irritation set up in the testicles, and that any active and wholesome counter-irritant, applied sufficiently near, will allay or even cure it, upon which the redness and tenderness of the urethra will soon subside. However, the caustic is often of great service in these cases, for such patients *will* bungle with every remedy put into their hands, as though they derived gratification from thus giving evidence of the miserable state to which they are reduced. With the application of the caustic they have nothing to do; it is sufficiently powerful to keep the fingers quiet for a little time, and in cases complicated with gleet arising from the "granular urethra," it seems almost indispensable.

Instead of Lallemand's instrument, I very often make use of one I had constructed for the purpose. It consists of a platinum canula and a stilet. The instrument is passed down to the diseased part, and the stilet being withdrawn, a small flexible bougie is introduced armed in the following way: the tip being scraped so as to make rough, it is dipped in fused caustic, and then in melted tallow; by this means a thin film of caustic is secured, which acts on every part, without the risk of excessive cauterization at any one point.

In all forms of spermatorrhœa, the food ought to be as plain but as nourishing as it can be procured; no pastry, pickles, or beer ought to be admitted into it, but *plenty of meat* and potatoes, or bread, for dinner, with a little tea or coffee morning and evening; if possible, meat twice a day. The worst cases have always seemed to be more benefited by a full meat diet than by any medicines; and it is not uncommon to find that a patient has grown worse in every symptom

in proportion as he has become a more thorough vegetarian. The further south we go, the more do we find a vegetable diet supplanting the animal food of northern nations, and the more prominent a place does spermatorrhœa assume in the catalogue of diseases. Difference of race I shall be told is sufficient to account for this: the Spaniard and the Moor are by nature more ardent than the Esquimaux; the Persian and the Arab than the Livonian. True, but not therefore by nature more prone to spermatorrhœa; it is, that, degenerating by civilization, they fly more readily to that kind of diet and to those habits which produce spermatorrhœa. From what I have been told of those going to hotter climates, and using the diet prevailing there it is so invariably to aggravate the symptoms, that it seems only reasonable to infer, that in men living altogether in an abnormal condition, habit, climate, and diet will approximate the diseased states of individuals, though possessed of no power to influence the original state of each recurring generation.

But while I strongly urge the use of plenty of meat, I exclude none of the four varieties of nutriment; and I say this advisedly, for I have seen some of the most obstinate cases of spermatorrhœa in ascetic patients, who religiously excluded sometimes all oily, sometimes all sugary matters, and thus appeared to give full swing to the oxalic acid diathesis with which many of them were afflicted.

[Imperfect secretion, and hence impotence, may arise from two causes,—internal weakness or excessive irritation set up in the testes. Where imperfect secretion or true spermatorrhœa follows youthful excesses, we may promise a cure, although there may be alarming symptoms, as, breathlessness, wasting, with loss of strength and spirits, if neither phthisis nor organic change in the nervous centres have taken place. Mr. Milton draws attention towards a few points as regards the treatment.]

1. The indigestion which accompanies many of these cases is often best relieved by the use of aromatic confection in combination with sulphite of soda and mint-water. Of the way in which it acts I do not profess to offer any explanation; I limit myself expressly to stating the results of my experience.

2. Where practicable, I would advise a gradual transition to the diet on which prizefighters are put when in training. A milk diet has been recommended on good authority, but it soon becomes insupportable; it often causes a most uncomfortable state of detension; and finally I have no great faith in its good effects. Whetever plan the surgeon resorts to, he will have to persevere with, for many of these patients have an objection ready so soon as anything is proposed.

3. I think it is imperatively necessary to attempt, by every means in our power, as blisters, *occasional* injections, &c., to diminish the sensitiveness of the urethra before resorting to the caustic or even the bougie. We thus not only secure a great number of patients, whom

the dread of some operation of this kind drives to the quack, but we materially lessen their sufferings without really losing time.

Spermatorrhœa, as a complication of congenital imperfect erection, is a more rare and formidable matter. Both, singly, are common enough, but they are often seen together. In the cases I have met with there was generally extreme derangement of the assimilative and digestive processes; the urine contained oxalates; a faulty state pervaded the organs of the senses, &c. I need scarcely say that it is necessary to draw a wide line of distinction in treatment between *congenital* and occasional imperfect erections, both of which may coexist with an otherwise healthy system.

Sufficient materials do not appear to have been accumulated to found any comprehensive plan of treatment for cases belonging to this subdivision, but, except in rare instances, they do not present any insurmountable difficulties, unless the imperfect erections are congenital, and combined with an otherwise faulty development.

I shall now, in conclusion, offer a few cases to illustrate the most salient points in the treatment I have ventured to bring forward. I have simply used a series of initial letters in compliance with what appeared to be a general wish on the part of the patients.

*Case* 1. *Night Discharges from Masturbation.*—A., a good looking lad, aged 17, applied Jan. 20, 1851, with spermatorrhœa, arising from masturbation, which he was continually performing in his sleep. To use an ointment of deuto-iodide of mercury, sufficiently strong to occasion vesication, and have a mild aperient. A few days subsequently tonics were begun with, and he was soon well.

*Case* 2. *Night Discharges from Gonorrhœa.*—Mr. B., applied Feb. 12, 1850, with severe seminal emissions, apparently arising from gonorrhœa, under which he had been labouring. A surgeon to whom he had previously applied, wished to apply the caustic, to which he objected. He complained of constipation, but otherwise enjoyed good health, and though pale, he was strongly formed. A grain of quinine with ten minims of dilute sulphuric acid, and a drachm of sulphate of magnesia twice a day; a small blister to the perineum.

14. He has not been able to apply the blister. To do so now, and continue the mixture.

March 7. Improving. To continue the mixture, and dress the blistered surface with zinc ointment.

April 11. He has had no emissions lately. To apply another blister, and continue the mixture. He had no more emissions, as I subsequently learned from him.

*Case* 3. *Prostatic Gleet.*—C., applied March 5, 1850, for the treatment of a discharge of thick mucus, like the unboiled white of an egg, after going to stool. It arose from a gonorrhœa, *he thought*, which had yielded to a tedious treatment extending over twelve months; among other remedies he had used salines and injections. On crossing his legs, pain was felt in the vicinity of the prostate. Copaiba and

turpentine were tried in vain; mercury with chalk and rhubarb were then given, and a blister was applied to the perineum, which rose freely. The nitric acid and decoction of pareira brava were subsequently administered, but as the discharge was not quite gone by the 20th of the ensuing month, he was ordered a second blister, which completely cured him.

*Case* 4. *Night Discharges with Prostatic Gleet.*—Mr. D., applied March 1849, with these affections. He had been addicted to great venereal excesses, and some time previously, while in a bad state of health, had contracted syphilis, for which he had taken so much mercury that his health had suffered severely. There was a constant discharge after stool, and sometimes after passing urine, of tenacious, glairy mucus, and he suffered greatly from night pollutions. In the left groin was a hard mass, apparently swollen glands and cellular tissue. To this a large blister was applied, and for three weeks not a single discharge was noticed; they subsequently reappeared to a slight extent, but were removed in a few weeks by quinine and exercise.

*Case* 5. *Night Discharges, Recurrent Gleet, and Prostatic Gleet.*—M. E., applied to me July 18, 1853, with the following symptoms:—He suffered from periodical attacks of great excitement, indigestion, and constipation; a free purulent discharge from the urethra and glans then set in, followed by several emissions, after which all the worst symptoms subsided; occasionally a mass of mucus was thrown out after going to stool. He had been addicted to masturbation, and had then caught a gonorrhœa, which made him worse. Having relieved the indigestion and costiveness, and got him into habits of morning exercise, I injected the urethra with the perforated syringe, and then applied the nitrate of silver with my own instrument; still the urethral gleet continued, and he had occasionally an evacuation of mucus after a stool. A blister was therefore applied to the penis, and in this case, also, there was not a single discharge for three weeks after; quinine was used and a cure speedily followed.

*Case* 6. *Night Discharges and Stricture.*—F., aged 22, applied Aug. 15, 1853, with seminal emissions, which occurred every night, and had now lasted, he said, seven years. He looked pale and shattered, and had been recently under the care of a surgeon, who had used the bougie, and materially relieved him. A slight stricture was now detected, which the bougie soon removed. Salines, containing nitrate of potass, were given, and these, with quinine, and mustard poultices to the perineum, effected a comparative cure to his previous state.

*Case* 7. *Night and Day Discharges, with accumulation of Sebaceous Matter.*—G., a stout healthy young man, applied, June 18, 1853, with seminal emissions, occurring two or three times a day, exclusive of those at night; they appeared to have resulted from gonorrhœa and a very unhealthy employment; never guilty of masturbation. Ordered, quinine twice a day; exercise and cold sponging.

25. He is much better; there is some sebaceous matter about the neck of the glans. To wash this well with soap-and-water, and afterwards apply a zinc lotion; the mixture to be continued.

30. He is just well, and has only had three seminal emissions the last week. He has removed all the sebaceous matter, and the prepuce is seen to be very red inside. To continue. As complete a cure ensued as ever does in these cases, a seminal emission at night occurring from time to time.

*Case* 8. *Night and Day Discharges.*—H., a pale, delicate young man, applied, June 25, 1853, with gleet and seminal emissions, occasionally in the day, but mostly at night. He complained of great weakness, pain in the back, and cough. An opium plaster to the loins, quinine twice a day, meat diet, and volatile liniment to rub on the chest; morning exercise. During the latter part of July he had a few days' sea-bathing, which did him a great deal of good; the opium plaster relieved the pain in the back, and was accordingly repeated as soon as it fell off. By the 12th of September he was so far improved that he had had no seminal discharges for three weeks; but the gleet grew so much worse, that I was obliged to order him injections. Having left off his medicines, he had a slight relapse, but on resuming them, was rapidly cured of all but an occasional discharge at night.

*Case* 9. *Day Discharges.*—Mr. J., applied, November, 1852. He had two to six times a day faint erections, and immediately after a thin discharge. The urethra was red, and there was a strong smell from the glans. He was pale, nervous, and so weak, that he thought he could not live, and he was tormented by a constant cough, with indigestion and costiveness. Salines, containing a little syrup of red poppies, and five grains of nitrate of potass, three times a day; mustard poultices to the perineum; veratria ointment to the testicles. Soon after quinine was commenced. He gradually recovered, and at the end of ten weeks was so far advanced towards a cure that he gave himself no further trouble about the matter.

*Case* 10. *Spermatorrhœa and Congenital Imperfect Erections.*—Mr. J., applied, August 12, 1852. Erections never had taken place, and there was a constant discharge from the urethra, which was in an inflamed state, of rank, thin fluid. He was, and always has been, very weak. Cauterization had been tried, and failed. He was the type of this class of patients. Every secretion and every sense was at fault, as if the whole constitution suffered from the struggle to establish the defective virile power. Blisters, quinine, and nitric acid, &c., were all tried in succession, with little improvement in either the spermatorrhœa or the erections.

Lastly, I would only urge the patient to banish from his mind the idea that a perfect absence of seminal emissions at night is compatible with health and continence. Those who tell him so deceive him, or are deceived; and I cannot conclude better than by quoting a part of

Mr. Curling's letter. "I assume," he says, "the cure of spermatorrhœa to mean, not the arrest altogether of involuntary emissions, but the prevention of their frequency to such a degree as to weaken the powers and impair the health.—*Lancet, March* 4 *and* 11, 1854, *pp.* 243, 269.

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121.—*Treatment of Congenital Syphilis.*—The continued administration of mercurials to infants is a matter often involving some difficulty. By simply giving the drug to the mother, and trusting to its influence on the mammary secretion, the effect is often not produced with sufficient rapidity; and if the ordinary preparations as hydr. c. cret., &c., be given, they are very apt to produce diarrhœa, and run off by the bowels. To obviate this, we observe that Mr. Wormald, at St. Bartholomew's Hospital, is in the habit of ordering a piece of flannel smeared with mercurial ointment to be worn constantly over the child's belly, never omitting, however, if the little patient be at the breast, to administer mercury to the mother also. The daily experience of the Skin Hospital proves, that small doses of the bichloride may be given without risk of any evil consequences, even at the most tender age. The dose usually given to an infant of from one to two months is about one ninetieth of a grain in solution three times daily; and it is usually combined with as much of the tincture of opium as may be necessary to relieve the extreme restlessness which often attends the disease. Under this treatment, illustrations of the truth of Abernethy's observation as to "fattening courses of mercury," are often afforded.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

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122.—*Case of considerable Sprouting of Warts on the Glans Penis.* Under the care of Henry Hancock, Esq., at Charing Cross Hospital.—[Ricord believed that warts upon the penis were non-syphilitic, other eminent surgeons think they are; but there can be no question that these excrescences may be implanted on the organs of generation in the same way as they are present upon the fingers. From the narrow space in which they grow, they are liable to produce great irritation and inflammation, and their removal rendered a matter of anxiety. The patient, in the case of Mr. Hancock, was a married man, aged 35, and stated positively that he had never had any venereal affection whatever. He had never noticed anything the matter with the penis until four months before admission, when the warts began to grow.]

The patient has congenital phymosis, and noticed, at the time just mentioned, that some tumour was developing between the glans and the prepuce in the neighbourhood of the corona. The pressure from within soon caused slight pain in the prepuce, and inflammarion ensued, marked with a vivid redness on its external surface near the corona glandis. The patient applied poultices; ulceration and perfo-

ration took place, and the mass of warts, which had been the exciting cause of all these symptoms, protruded through the ulcerated opening in the prepuce.

The verrucæ having thus obtained room, seemed to grow more rapidly than before; the aperture just mentioned became larger, and the warts grew to such an extent as to cover the glans almost completely, and to double its size. The extremity of the prepuce was, in the meanwhile, almost separated by ulceration from the rest of that process, abundant suppuration had set in, and the parts looked, to an unpractised eye, as if the organ had been suffering from carcinoma. Very little or no pain accompanied these changes, and after the poor man had exhausted the means advised by neighbours and friends, which means irritated the parts considerably, he applied for admission at this hospital.

On the 22nd of November the patient was brought into the operating theatre, and when he had been rendered insensible with chloroform, Mr. Hancock begun to remove, with the scissors, the enormous crop of warts which had sprung up about the part, as also the thickened semi-detached pieces of prepuce which were giving to the organ a misshapen aspect. When the whole mass of verrucæ had been excised, the penis was surrounded with lint dipped in cold water, and the patient placed in bed. The progress has been most satisfactory since the operation, and the parts are now quite cicatrized.—*Lancet, Dec.* 17, 1853, *p.* 576.

## AFFECTIONS OF THE SKIN.

### 123.—ON REVIVAL OF THE ANCIENT TREATMENT OF CALLOUS ULCER BY EXCISION OF THE MARGIN.

By John Hainworth, Esq., late Surgeon to the Lincoln Dispensary and City Gaol.

[In a paper read before the North London Medical Society on this subject, Mr. Hainworth thus describes the disease:]

The apparently sunken, nearly circular or oval, ulcer, varying in diameter from one-third of an inch to three, four, or five inches, having a level, pale-red, glassy surface, void of granulations, excreting a thin, scanty, unirritating fluid, with a hard, precipitous, white or dusky edge, surrounded by integument, thickened and indurated by infiltration of lymph and serum, even now occupies too many a bed in our great hospitals, and too frequently exhausts the patience of sufferer and surgeon, dresser and nurse.

From this description it will be seen, that those ulcers are purposely excluded from consideration which are either inflamed or irritable,—which depend simply on a varicose state of the veins,—which are

complicated with diseased bone, or with any special local or constitutional cause.

I have said, "apparently sunken" ulcer, because I hope to satisfy you that it is not really sunken, but that the surface is made to assume that appearance by the elevation of the margin, not by actual loss of substance.

[Mr. Stafford calls this kind of ulcer the "deep and excavated ulcer." Mr. Syme believes that the depression is more apparent than real, the margin being elevated by the effusion of serum and lymph. Mr. Critchett concurs in this view. Mr. Hainworth says,]

That considerable thickening by effusion exists in the surrounding integument is undoubted and unquestionable; but the like effusion will be found present to nearly an equal extent beneath the ulcer itself, forming the firm substratum on which it rests; and if this be the case, we must look elsewhere for the explanation. Here our authorities fail us; for though many surgeons, from the earliest period till at least the close of the last century, directed their remedial measures to the removal of the callous margin, yet I have been unable to find in any writer a description of its actual structure—that is, of the tissue of which it is composed. To this omission may probably be ascribed the disappointment experienced by nearly all who have made assay of the various modes of treatment suggested by numberless surgeons, any or all of which have been most successful in the hands of the proposers. Dr. Adams, of Banchory, justly remarks:—"One cannot but entertain the most painful feelings of distrust in all modes of treatment where one cannot recognise some reasonable bond of connexion between the remedy applied and the effects produced."

In the present day, none dispute the axiom, that correct pathology is the only solid and permanent basis of sound practice.

Yet, strange as the assertion may be deemed, the ancients in this class of cases appear to have known more than the moderns, even in this point of view; for they affixed to the margin of these ulcers the same name which they gave to the common corn on the feet (callus); and with sufficient reason, for in each case the indurated parts are composed of the same tissue, namely, a gradual accumulation of effete cuticle, secreted layer beneath layer, under the stimulus of a morbid action or an abortive effort at reparation;—to use Mr. Paget's form of expression, under an arrest or error of development.

The mode of formation of the callous margin scarcely admits of accurate description, because it usually takes place while the ulcer is not under surgical treatment, but while exposed to the many circumstances of neglect in dressing and cleanliness, errors in diet and excesses, over-exertion and fatigue, or some of the many other injurious influences to which the patient may have been subjected. Any one of these may induce the degeneration or death of the granulations at a time when the cutis is vigorously forming new skin; and

this process being suddenly arrested, the cuticle at the margin may continue to be formed more rapidly than in health, just as, under the irritation of unusual pressure, callous cuticle or a corn is rapidly formed on the hands or feet.

But it is not within the scope of this paper to enter on the full history of the callous ulcer, but rather to deal with it when fully formed and established, as usually presented to the surgeon for treatment.

In this state the callous margin of accumulated cuticle forms a hard, solid ring, pressing injuriously on the parts beneath, and strangulating to a certain extent the vessels of the cutis immediately around the ulcer. I believe that all pathologists, without exception, are agreed, that the new skin for the formation of the cicatrix is derived from the vessels of the cutis at the margin. Hence it must be apparent, that, if these vessels be subjected to a pressure which amounts to constriction, the formation of new skin must be arrested. Further, surgeons accustomed to the daily observation of numerous cases of this class of ulcers will, I doubt not, call to mind not a few instances where, even under careful and judicious treatment, this ulcer has—slowly, indeed, but steadily—become larger, the surface of the sore retaining the pale, glassy aspect, and the sides their hard precipitous appearance. Now, this seems precisely the effect likely to ensue on the firm and steady, but unirritating pressure of a foreign body.

As a result of the suspension of cicatrization by the construction of the vessels at the circumference, the ulcer ceases to granulate, consent of parts being wanting; a preparation on the part of the ulcer to accept union with the skin being utterly useless so long as the vessels are constricted whose office is to form new skin.

This, then, is the condition of the parts which the very ancient operation by excision was intended to remedy; a dense ring, composed of compact layers of accumulated cuticle, acting as a foreign substance, by pressing and constricting the living structures beneath.

Some few other methods of treatment have been directed to the exclusive object of removing this ring, as a necessary introduction to other treatment; but I hope to convince you that the most safe, easy, and expeditious method, is that by excision of the callous margin.

To some this assertion may appear paradoxical, but I trust not so to those who have followed the description given above. Mr. Critchett indeed says:—"Chelius recommends these callous edges, when much raised, to be shaved off with a scalpel previous to commencing other treatment—a plan (says Mr. Critchett) I have never tried, and one that I imagine would be deemed somewhat too heroic by English surgeons."

Now, this is rather an unfortunate expression of opinion on a plan which the writer confesses he has never tried, for the ground stated—

that "it is somewhat too heroic for English surgeons"—is both unsound and insufficient; unsound, because, if properly performed, it is the very reverse of "heroic," being both painless and bloodless; insufficient, because, even if heroic as the author erroneously supposes, it would be much less so than others resorted to by English surgeons for the purpose of curing this obstinate complaint, as, for instance, the slashing, and starring, and cross-cutting of certain great operators, or the application of strong nitric acid by others. This allusion to the ancient operation affords decisive evidence that the operation and the object proposed to be effected have alike become obsolete in the English school of surgery.

The excision of the callous margin is performed with the express immediate intention of removing the ring of indurated cuticle, without injuring or interfering with any other tissue. Bearing this in mind, the operator, with a sharp scalpel, carried nearly horizontally, or on a plane with the surface of the ulcer, pares or shaves off layer after layer of cuticle, till he reaches that which immediately covers the cutis; this last layer he will find very thin and transparent, through which is seen the bright red cutis beneath, bearing some resemblance to the florid margin of the lips. Beginning with about half-an-inch of the margin, and proceeding cautiously till he reaches the cutis, he is enabled to form an estimate of the varying depth of accumulated cuticle, which is always greater at the inner margin than outwardly, where it passes off insensibly into the sound skin. Having ascertained this depth, he can then proceed more boldly and rapidly to the complete removal of the margin round the whole circumference of the ulcer. If the operator is very careful, very steady, and very dexterous, he may accomplish his object without drawing blood; but the probability is, that in a few points he may wound the cutis.

The operation being completed, he will then see how very little of the apparent excavation was due to the "surrounding congestion and morbid deposit" upon which, according to most modern writers, not only the appearance of depression, but also the ulceration, depends. If he has had the manual treatment of many cases of this class of ulcers, he will be surprised at the light thrown upon their nature and treatment. He will, I think, be able to understand why some of the numerous modes of treatment have succeeded, and why others have failed,—why even precisely the same mode has sometimes succeeded, and at other times failed. He may, in my opinion, also understand why "some forms of callous ulcer are very difficult to cure by support, or any other method," where this preliminary operation, or an equivalent treatment effecting the same end, directly or indirectly, has not been adopted. The after-treatment should be that usually employed to promote granulation. The patient should be confined to bed, and a linseed poultice applied during four to seven days. By this time the ulcer will usually be covered with the small, firm, conical, florid granulations which characterise the reparative process, and from the

margin will be seen the bluish-white film of new skin and cuticle passing over the new granulations; while already the size of the sore will be diminished by the contraction which takes place almost simultaneously with the re-establishment of the healthy process of reparation.

The ulcer is now in a fit state for the employment of the treatment adapted for healthy ulcers, on which I need not at present dwell.

The operation described appears to date its origin at least as far back as the days of Hippocrates. The indefatigable translator of the Sydenham Society's edition of the works of that author and of Paulus Ægineta, the learned Dr. Adams, of Banchory, has, in both works, shown that it was advised and practised by them, and by a long succession of great authorities, down to a comparatively recent period.

[To the close of the last century the callous ulcer was treated by excising its margins. In 1780, Mr. Benjamin Bell recommended the application of the nitrate of silver instead. Mr. Baynton, however, not long afterwards drew the attention of the profession most forcibly to this disease.]

The views of Mr. Baynton diverted the attention of the Profession from the real primary obstacle to the healing of a large proportion of callous ulcers; from what may be styled the "previous question" to all plans of treatment. No doubt, many even of this class of sores recovered under Mr. Baynton's plan, because the indurated cuticle, being hermetically sealed from the action of the air, became softened by infiltration of the secretions, and peeled off with the plaster on changing the dressings, so that it ceased to exercise a compressing and constricting power on the living structures. But those who have had the manual treatment of these ulcers, must acknowledge that they have not unfrequently been almost disheartened at the utter failure of all their careful and laborious bandaging. Mr. Critchett, while strongly advocating Mr. Scott's plan, candidly acknowledges that some such cases resist the employment even of the measures he advises, based as they are on what he considers the only sound principle. I have, however, some ground for stating that the late Mr. Scott, of Bromley, in his own practice, occasionally resorted to a measure which effectually removed the callous edges, and stimulated the surrounding integument to new and vigorous action. Many years ago, one of the surgeons of St. Thomas's Hospital, mentioned publicly in the wards, that he had been told by a patient who had been under the care of the elder Mr. Scott, that the strapping and bandages, having been applied in the accustomed manner, were allowed to remain untouched for about ten days, exercise being enjoined from the commencement. When removed, at the end of that time, it was found that, not only the callous edges were removed, but the ulceration had apparently extended over a large portion of the leg; the acrimony of the retained discharge

from the sore, and of the secretions from the sound and unsound skin, having occasioned extensive excoriation. It was stated, that after this preliminary step, the usual mode of applying his bandages was employed by Mr. Scott, with the gratifying result of the rapid healing of an old and obstinate ulcer. Now, after making every allowance for the unintentional departure from strict accuracy in the reports of treatment given by a non-professional patient, we may, I think, perceive a certain amount of truth in the above account; especially when we recollect the admitted success of the blister, as recently advised by Mr. Syme, and in ancient days by Hippocrates, and by most systematic writers in all subsequent ages. The operation of a blister is similar to the mode said to have been pursued by Mr. Scott, though more rapid. In each case sound and unsound cuticle would be removed at the same time, and with it the solid ring forming the callous margin. Mr. Syme's plan is another instance where a remedy proposed for one purpose actually effects another, and in that way proves beneficial. Objections have been raised, as that the blister is very painful, and that patients are unwilling to submit to the application,—an objection which must be deemed valid when a painless substitute is offered, and that more efficient. Another still stronger is, that it is apt to produce permanent irritability of the skin. A third objection can scarcely be deemed admissible; it is said to be "insufficient of itself to effect a cure." The same objection would avail against any single mode of treatment. As I understand Mr. Syme's proposal, he intends the blister as preparatory to other treatment. Now, in point of severity, the treatment by excision will bear a most favourable comparison either with that said to be Mr. Scott's, acting by the acrimony of the retained secretions, or with Mr. Syme's blistering plan, or with the recent method, by applying nitric acid; while, as to safety and rapidity, I think not a question can be raised. Mr. B. Bell's proposal to substitute arg. nitr., with the direct view of removing the callous edge, I tried extensively in conjunction with the plan of Mr. Higginbotham, of Nottingham, but in this class of ulcers, without a single instance of success.

The more indirect plan, as that by filling up the wound to the level of the margin with melted wax, I have seen to fail, even in the hands of the proposer's friends and fellow-students. Where it has succeeded, the cause has probably been, that the wax, when cold and firm, took off the pressure of the solid ring of cuticle from the vessels of the cutis.

Mr. Skey's treatment by small doses of opium I have known to be followed by occasional success, even in other hands, though many have been greatly disappointed. Having practised in a district where opium-eating is not uncommon—where the white poppy is commonly grown in the peasant's garden, in order that the cottage may always have a supply of poppy-tea for the infant, while the mother goes out stone-picking or weeding, or other field-work—I have met with old ulcers

among habitual consumers of opium; and here of course Mr. Skey's proposal fails us. Perhaps the true explanation of the success which has followed many plans in hospital practice, may, in some instances, be found in the improved health which attends on rest from labour, on regularity of hours of meal-time and repose, and on a regulated diet. On one occasion I determined to put these influences to the test in the case of a prisoner for theft. He had had an ulcer over the front surface of the tibia for seven years. The sore was about the size of a half-crown, with elevated edge, and smooth glassy surface. He was put on the ordinary prison diet, which was ample or even liberal, but not allowed beer, wine, or spirits. Of course he was not permitted to work on the tread-wheel, but other work in-doors and out was provided, and he had at least two hours out-door exercise daily. The only applications were lint to the wound, and simple ointment, to prevent evaporation, care being taken thoroughly to cleanse the surrounding skin, and to prevent the patient from wiping the surface of the sore, which had been his previous habit. The improvement was was steady. In about six weeks the ulcer was firmly healed, and continued so during the term of his imprisonment. As usual, he again committed an offence which brought him under my notice some months afterwards, when I had the opportunity of ascertaining that the cure was permanent.

I have thus hastily and imperfectly reviewed the opinions entertained in ancient and modern days of the circumstances which occasion the acknowledged difficulty in the treatment of the old callous ulcer. I have endeavoured to show that the primary obstacle to all successful treatment is the presence of a solid ring of compact and indurated effete cuticle; that the necessary preliminary curative measure is the removal of this ring; and that the safest, the mildest, and yet the most speedy and efficacious method of attaining this end is the excision of the callous margin, strictly confining this operation to the paring or shaving off the accumulated cuticle without wounding the cutis.

For a practical knowledge of this operation, I am happy to acknowledge my obligation to Mr. Hewson, one of the surgeons of the Lincoln County Hospital, who told me, that he had acquired his familiarity with it from a House-surgeon of that institution, whose thirty years' tenure of office dated from the commencement of the current century.

[Mr. South declares the success of this mode of treatment to be admirable. Here are the notes of some cases at one time under him.]

David Brooks, aged 30, labourer, was admitted into Henry's Ward, St. Thomas's Hospital, Aug. 14, 1853. He has an ulcer on the right leg, consequent on an injury sustained ten years ago, since which time it has never entirely healed. He has lived very badly, being at times half starved. Has usually worked among the barges on the

the river, being often a considerable time in the water and mud. Numerous remedies were applied to the sore with little or no effect, the hardened cuticle appearing to form a barrier to the cicatrization. At last, Mr. South determined to try the effect of paring the edges of the ulcer. This was done several times, and the sore soon showed a healing margin. Before the sore was quite healed, the patient was discharged, in consequence of a deficiency of beds. He then became an out-patient, and then was again admitted into the hospital; but of subsequent progress no notes were taken. There was no doubt of the benefit ensuing on the paring of the edges while he was in Henry's Ward.

Timothy Driscol, aged 40, an Irish labourer, was admitted into George's Ward, St. Thomas's Hospital, on Tuesday, September 13, 1853. He has had, on the front of the right leg, an ulcer for the last sixteen years. It is now about the size of a man's hand; the edges are raised and callous, and the surrounding cuticle is much thickened; the surface of the sore is glassy, but at the edges are a few unhealthy granulations. He suffers little or no pain, unless from injury; the discharge is scanty, thin, and unhealthy. Mr. South directed the application of linseed poultice and the dilute nitric acid lotion. After a little time the granulations became more numerous and healthy, but the edges showed little inclination to heal, the white callous ridge remaining as on admission. About three weeks after admission, Mr. South directed the edges to be pared. Hardened cuticle, in many parts of some thickness, was removed; this was done with little or no pain to the patient, and the bleeding was inconsiderable. In some parts, where the edges were not so hard, simple scrapings were required. At the end of a week a manifest improvement had taken place; a thin healing margin extended towards the centre of the sore; the same applications were continued. The paring process was repeated several times at intervals of about eight or ten days. As soon as the granulations rose to the level of the surrounding healthy parts, simple ointment and bandage were applied, the edges being now perfectly natural. The sore healed rapidly, and, when the patient left the hospital in December, was not larger than a half-crown. He afterwards attended as an out-patient, bandages being applied till the sore was entirely healed.—*Med. Times and Gazette, Jan.* 28, 1854, *p.* 81.

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124.—*On a New Mode of Treating Ulcers from Irritation of the Nails.*—[At a meeting of the Harveian Society, Mr. Ure related the following case of a young woman aged 23, who was under his care at St. Mary's Hospital.]

Four months before admission, the great toe of the right foot became uneasy and swollen, the patient having pared the nail the day preceding. Ere long, a painful and irritable sore made its appearance by the side of the nail, which discharged from time to time a quantity

of thick, bloody, and sometimes black-looking matter. She was thus disabled from going about and earning her livelihood. For four years antecedent, she had been in indifferent health, and had suffered from excessive flow of the catamenia. She had procured the advice of some respectable practitioners, and been under treatment during several weeks, without, however, obtaining any benefit. As the sore was rather in an inflamed state on her admission, poultices were applied. On the third day, when all surrounding inflammation seemed to have subsided, Mr. Ure prescribed the use of a salve composed of one grain of finely levigated arsenious acid, incorporated with an ounce of spermaceti ointment. He was led to try this remedy by the suggestion of Mr. Copeland, who deemed it almost a specific in ulcers of this nature. This was steadily employed for about ten days, without producing any marked change on the sore. Mr. Ure then ordered, instead, the continuous application of a hot saturated solution of alum. This induced rapid absorption of the thickened parts, and prompt cicatrization of the ulcerated surface, so that the patient was enabled to leave the hospital, cured, in the course of three days. Mr. Ure observed that, while alum is soluble in five parts of water at 60° Fahr., it is soluble in little more than its own weight of water at the boiling temperature. A hot saturated solution is, consequently, more energetic in its action than a cold one. He had been led to resort to its use in the above instance, from having witnessed its efficacy in an analogous case. A gentleman consulted him in the autumn of 1852, concerning a sore seated by the side of the nail of the great toe, which had annoyed him for nearly a year. A variety of treatment had been exhausted in vain attempts at cure, including the plan proposed by Sir A. Cooper, of paring the nail as thin as possible, raising the edge, and inserting a small piece of lint between it and the sore; the free application of lunar caustic, as recommended by Mr. Wardrop; and also blistering the part. By the constant application of a saturated solution of alum, as hot as could be borne, this refractory sore was eventually healed in a few days.—*Lancet, March* 18, 1854, *p.* 308.

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## 125.—EXTENSIVE PHAGEDÆNIC ULCERATION, SUCCESSFULLY TREATED BY THE ACTUAL CAUTERY.

By Dr. S. T. Chadwick, Bolton-le-Moors.

[This patient, 25 years of age, ten days after exposure to contagion, observed a small pimple near the frenum on the penis. Caustic was liberally applied, apparently with success. At the end of a fortnight, swelling in the groin came on, an abscess formed, which burst spontaneously. The sore on the penis was nearly healed. Subsequently the opening in the groin extended rapidly, and he soon laboured under all the symptoms of irritative fever.]

Where the chancre had existed there was a slight depression, some discoloration, but no hardness of the base; it had been cicatrized for two or three weeks. In the groin was a foul ulcer of the size of the palm of the hand; its surface presented a yellowish dark aspect; the edges of the wound were ragged, uneven, and undermined, secreting a thin, fœted, sanguinous discharge; an areola of a livid tint surrounded the wound for a considerable extent. I ordered him to be confined to bed, to live on broths, jellies, and farinaceous food. The compound decoction of sarsaparilla with nitric acid, twelve grains of Dover's powder, at bed-time. To the ulcer, the nitrate of silver, an opiate lotion, and poultice of linseed-meal. To give the symptoms and treatment of this protracted case *in extenso* would be tedious. Suffice it to say he took the compound decoction and extract of sarsaparilla, the mineral acids, quinine, opium, and various preparations of iodine; to the wound were applied the strong nitric acid, muriate of antimony, the balsam of Peru, different kinds of lotions, ointments, and poultices. The edges of the ulcer were cut away by means of curved scissors; a moderate allowance of stimulants and a suitable regimen enjoined; still, however, the phagedæna continued progressing, so that, after the expiration of six weeks from the time of my first seeing him, its size had got almost treble in extent, sometimes assuming a more healthy character, but most provokingly soon again relapsing into the original diseased action.

His friends becoming alarmed, they requested that Dr. Pemberton, of Wigan, might see him along with me, and the same evening he did so. That gentleman made some suggestions as to treatment, which were carried out for a fortnight, but unfortunately, as heretofore, without any alleviation of the symptoms; in addition to which, our patient had now profuse perspirations, colliquative diarrhœa, excruciating pain, and sleepless nights. All these circumstances combined exhausted him to an alarming degree. Now the wound extended down the inside of the thigh towards the ischium, across one side of the pubis to the linea alba, proceeding upwards, half way towards the umbilicus. As we had tried every remedial measure we thought likely to be beneficial, Dr. Pemberton informed me that Mr. Moore, of Bolton, had related a similar case to him, which also had resisted every plan of treatment, until it was resolved, as a *dernier ressort*, to apply the actual cautery, and which had the desired effect.

We expressed a desire that Mr. Moore should meet us in consultation, and accordingly the following day he did so. After examining the case, and being informed of the treatment that had been adopted, he gave it as his decided opinion that nothing short of the hot iron would prevent the patient succumbing from the malady, to which procedure our patient, nearly worn out by suffering, at once assented; consequently it was done at once, and afterwards the parts covered with plegets of lint, spread with cerate, composed of two parts of the cerate of resin, and one of the oil of turpentine; a draught was ad-

ministered, containing forty drops of tincture of opium, which was followed by several hours of refreshing sleep.

In a week after the operation his appearance was marvellously improved, diarrhœa ceased, perspiration less copious, pain comparatively trifling, appetite returning; the spreading of the ulceration arrested, discharge more healthy, surface of the wound granulating, and cicatrization in some parts commencing.

In a few days subsequent to the above report there were appearances evinced at two or three points, at the edges of the wound, of the phagedænic ulceration re-commencing, which were, however, speedily changed on the second application of the cautery.

It was astonishing to observe the rapid reparation of so great an extent of mischief. Granulation and cicatrization went on so quickly, that in the course of a few weeks the wound was reduced to little more than the size of a crown-piece, when the healing process became suddenly arrested; the ulcer now became of an indolent character, with thickened edges, its surface shining, and of a pale colour, and it was not before the lapse of several months that it became entirely healed.

The last time I saw the patient was in about two years after his recovery; he was then in excellent health, but the appearance of the groin was somewhat forbidding, from the extent of cicatrix, puckering of the integument, and two or three extensive bands, that had the effect of drawing the thigh on the body, which were liable to crack and ulcerate from very trifling causes.—*Lancet, Jan.* 7, 1854, *p.* 4.

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126.—*Treatment of Favus by Sulphurous Acid Lotion.* By Dr. J. H. Bennett, Edinburgh.—The treatment I have found most useful in favus is, after removing the crusts with poultices and shaving the scalp, to keep the surface moist with cod-liver oil. Certain it is that so long as the oil is applied the disease never returns, and in the majority of cases in young persons especially if they be well fed, a permanent cure is effected in about six weeks. Having observed, however, that Dr. Jenner, of London, had treated the disease by means of a sulphurous acid wash, composed of one part of sulphurous acid mixed with three parts of water, and knowing the powerful effect of this acid in checking parasitic vegetable growths, I tried this treatment in the Clinical Ward. Dr. Alexander Struthers informs me that, in January 1853, when resident clinical clerk, he had treated a case of favus with success in this manner. Five cases, in all of which the parasitic character of the favus crusts was demonstrated by means of the microscope, were selected for trial. In all, the crusts were first removed by poulticing, and the head was kept shaved. Lint saturated with the lotion was ordered to be applied over the entire scalp morning and night, and the whole kept constantly moist by wearing an oil-silk cap. In two cases, about the third week, the favus crust had

already come back, which I traced to the oil-silk cap having become displaced during the night, and not covering the scalp with sufficient care. In the other three cases the surface was kept moist and clean for six weeks. Then the treatment was suspended, and in twelve days the favus had returned in two cases. In the third case a cure was effected, and what is singular is, that it was the worst case of the five.—*Monthly Journal of Med. Science, April* 1854, *p.* 302.

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127.—*Treatment of Psoriasis.* By Jonathan Toogood, Esq.—[Mr. Toogood, in his 'Reminiscences of a Medical Life,' gives the following case of this obstinate skin disease, as related by Mr. R. Strong, with whom he attended the patient.] E. H., a girl about sixteen years of age, who had been liable to slight attacks of psoriasis about three years since, after having undergone great bodily fatigue and mental anxiety, became the subject of a much more aggravated form of this disease than I had ever before witnessed. The skin of the arms, legs, and face, were first affected, and it very rapidly spread over the whole body. The fissures in the bendings of the joints were so extensive that she could scarcely move, and on getting out of bed in the morning the scales fell from her in such quantities, that I could easily trace where she had been; and the eyelids were so retracted, that she could not close them when asleep. I tried Plummer's pill, hydrargyrum cum creta, with various tonics, in conjunction with liquor potassæ. I then had recourse to liquor arsenicalis, and baths of sulphuret of potash, none of which had the slightest effect; and the poor girl's strength failed her so fast that I began to think the disease would destroy her, when fortunately I was induced to consult you, who advised my trying pitch, in the form of pills. I did so, giving her at the commencement ten moderate-sized pills three times a day, and gradually increased the dose until she took the enormous quantity of ninety pills every day, thirty at a dose. She had not taken the pills more than a week before there was a decided improvement apparent; and in six weeks or two months, she became quite free from every symptom of the disease, and has up to this time continued quite well; and, what is most extraordinary, there is not the slightest mark left on the skin.—*Brit. and For. Medico-Chirurgical Review, April* 1854, *p.* 483.

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128.—*On Pemphigus.*—[The following important *conclusions* were arrived at from the detailed notes of eighteen cases of this disease, under the care of Dr. Bennett, Mr. Skey, and Mr. Startin.]

1. That pemphigus is a disease affecting all periods of life; especially liable to occur between the ages of 4 and 25.

2. That, like many other skin diseases, it very frequently recurs in those who have once been its subjects.

3. That it usually affects those only of a fair complexion and thin skin. (To this we find no exception among the cases in which note has been made as to the complexion.)

4. That it is rather more common in the male than the female sex.

5. That its severe chronic and relapsing forms are more frequent than the benign and transient.

6. That the parts most liable to be affected are the legs, arms, genitals, abdomen; seldom the face, and very rarely the hairy scalp.

7. That the serum of the bullæ is almost always alkaline. (It was tested in most of the cases, and no exception occurred; the alkalinity was generally very great.)

8. That it is very rarely a symptom of congenital, and perhaps never of acquired syphilis.

9. That it occurs commonly to those of good physical conformation, but is mostly coincident with temporary cachexia.

10. That it is not very markedly influenced by season.

11. That its idiopathic infantile form is a very mild disease, and will usually recover spontaneously.

12. That it is not, as a rule, associated with any particular form of cachexia. (In but two of the cases were the patients scrofulous; none were known to be rheumatic, or to have had ague; dyspepsia was an attendant in but few.)

13. That the general indications are for the use of tonic regimen and generous diet; but that these will not suffice for the cure.

14. That arsenic may be esteemed an almost specific remedy, even in the worst class of cases.

15. That arsenic does not merely repress the eruption, but remedies the unknown constitutional cause on which that symptom depends, always very much benefiting the general health of the patient.

16. That arsenic does not prevent the liability to subsequent attacks, but that such attacks are always much less severe than the original one, and tend, if treated by the same remedy, to diminish in intensity on each successive occasion.

17. That the early age of the patient does not in the least forbid resort to the arsenical treatment.—*Med. Times and Gazette, Feb.* 11, 1854, *p.* 135.

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129.—*Pityriasis Versicolor Curable by Local Applications.*—This common disease, known vulgarly as "Liver spots," and in the nosology of Wilson as Chloasma, is one generally acknowledged to be of extreme intractability. Mr. Paget, we notice, among his out-patients at St. Bartholomew's, does not adopt any constitutional treatment whatever, but simply orders a wash of the bichloride of mercury, (gr. j. ad ℥j.) He informs us that he has never known a case long resist the influence of this remedy regularly applied to the whole affected surface once in

the day. At the Skin Hospital, although an arsenical course of internal medication is always prescribed at the same time, yet a mercurial lotion is also used, and may possibly be the chief curative agent. In the hands of Dr. Jenner, at the University College Hospital, the sulphurous acid has, we understand, succeeded very well. There can be little doubt but that the disease is almost invariably curable by local applications solely (parasiticides?) In relation to this mode of cure, it is important to connect the observation of Eichstedt and others, as to the eruption depending on the presence of a cryptogamic plant. Another interesting link in the same chain of evidence has recently been made out at the Skin Hospital, namely, that it is not unfrequently contagious.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 501.

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130.—*Juniper Tar Ointment.*—Dr. Routh exhibited to the Medical Society two preparations—first, the ordinary huile de cade, the product of the destructive distillation of juniper wood; secondly, the juniper tar ointment, or an ointment prepared with the former oil in the proportion of an ounce and a half of the oil to half an ounce of suet and an ounce and a half of lard. The former preparation was well known on the continent; the latter was prepared according to a prescription of Dr. Felton, of Aix-la-Chapelle, who had found it of the greatest benefit in many cases of eczema, which had resisted other treatment. He (Dr. Routh) had used it for a twelvemonth back, and found it most efficacious. It was applied locally as a salve without necessarily any other treatment more than that depending on mere regulation of the bowels. He believed it had been used by other medical men in London; but his object in bringing it forward was to have so useful a remedy more generally known and employed. His first specimen was prepared by Messrs. Duncan and Flockart, of Edinburgh; that on the table was prepared by Mr. Greenish, of New street, Dorset square.—*Lancet, Oct.* 22, 1853, *p.* 397.

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131.—*Cure of the Itch.*—Each case of itch during the past year has been treated according to the plan formerly adverted to, viz., friction of the body with brick-dust, so as to expose the *acari* to the sulphur ointment, which is then well rubbed in for half-an-hour, and after this the man is subjected to a good ablution of soap and water. The whole time occupied by this proceeding is less than an hour and a-half, and perfect cure resulted in each instance. Under the old plan the men were placed for three days in the itch-cell, wrapped up in blankets, smeared with sulphur ointment; and a less period did not kill the *acari.*—Extract from the "Report on the Discipline and Management of the Military Prisons in 1852," by Lieut. Colonel Jebb, C.B. (Blue-book.)—*Med. Times and Gazette, April* 8, 1854, *p.* 363.

132.—*Sesquichloride of Iron in Erysipelas.*—Many instances have lately occurred in the London hospitals in which the treatment of erysipelas by the much-vaunted tincture of iron has appeared to be very successful, but none of the experiments have been sufficiently crucial in their character to warrant us in considering their results as conclusive. Still, however, the evidence in favour of the remedy is very strong. Some of the patients on whom it has been tried have been young children. With regard to local applications in this disease, it may be stated, that the wrapping up the affected part in a large and thick sheet of cotton wool appears to be very superior in its protecting influence to all others. In several severe cases of erysipelas of the scalp, lately in St. Thomas's Hospital, Dr. Goolden had the whole affected parts smeared over with a thick coating of white paint. The patients did very well, but the remedy is not an agreeable one to use. It is, we believe, in common employment in some of the pottery districts, where erysipelas of the face and head, from the alternate exposure to cold draughts and to furnace heat, is very frequent.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 502.

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133.—*Use of Collodion in Burns.*—This fluid when applied to burns, promotes healing and prevents suppuration. Blumhardt has tried it, with great success, in three cases, one of them caused by explosion of gunpowder, and two by the ignition of spirits of wine, where the breast, neck, face, and hands were all severely scorched. Collodion was applied to the skin an hour and a half after the accident, by a hair pencil; the redness, pain, and swelling, were thereby diminished, and the patients soon experienced no inconvenience save the tension occasioned by the firmly adherent pellicle. The inflammation completely subsided, and the recovery was rapid. He considers the collodion to act beneficially in two ways; *first*, by affording a safe protective covering to the sensitive cutis, and *second*, by giving a uniform support to the part, and relieving the capillaries from all undue distension.—*Würtemburg Corresp. Bl. No.* 56.—*Monthly Journal of Med. Science, April* 1854, *p.* 372.

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134.—*On the Treatment of Corns.* By Dr. Frederick James Brown, Chatham.—[Dr. Brown has been successful in treating these troublesome growths by *enucleation.* It seems that a corn can be picked out of its nest or concavity. Dr. Brown proceeds to describe what happened on his own person.]

In 1851, a corn formed on the pulp of the index finger of my left hand, as a direct consequence of practising upon a violin. Its size was about three-twelfths of an inch long, and one-twelfth wide. I must acknowledge that the situation of the corn was evidence of my nattention to the injunction of the music masters,—viz., to press the

strings with the tips of the fingers, and not with the pulp. Violinists usually have corns at the tips of their fingers.

The corn was a source of annoyance to me, and interfered with the use of the finger. Some months after its formation I applied to the corn a piece of lint covered by simple ointment, and kept the lint to the part day and night. After a few days I noticed that there was a slightly-raised line of cuticle surrounding the corn, making it apparent that the latter was set in a depression as is a stone in a brooch. I carried a penknife in a vertical direction in the groove betwixt the raised line of cuticle and the corn. At one spot, a drop of blood appeared, and gradually became diffused beneath the corn. Next day the corn dropped out, leaving the true skin perfect, with the wavy lines of the finger in a normal condition, and covered by cuticle in a natural state. The cup-like depression ceased to be apparent after a short period.

This case clearly shows that a corn produced by repeated pressure of the finger against a violin-string consists of indurated layers of cuticle placed upon normal cuticle, and seated in a cup-like depression of the cutis vera.

A few weeks back I operated on a friend who was suffering with a corn on the great toe, in the usual situation of a bunion, which it closely resembled. In this case I used no ointment, but passed a penknife vertically around the corn, for the full depth of the indurated cuticle, in the situation of the marginal line (which from pressure and dryness was scarcely apparent). The next step consisted of lifting out the corn by evulsion, or rather by a process of enucleation, aided by a few touches of the knife. The true skin was not wounded, consequently there was no effusion of blood. After the corn was taken out, a minute one was found beneath the situation of the larger corn, and it was removed in a similar manner.

This is all the experience that I have had in corn operations, but I advance the method of enucleation as one that is effectual, simple, and unattended by much pain.—*Lancet, April* 15, 1854, *p.* 417.

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135.—*On Inoculation with Milk and Variolous Pus to supersede Vaccination.* By M. Bossu.—M. Thiele (of Kassan) and M. Robert (of Marseilles) have proposed to blend variolous matter with milk, for the purpose of weakening the poison, attenuating it, and localising its effects upon the economy. This proceeding, justified by some success, has attracted considerable attention, because it furnishes the means, in the event of small-pox invading any locality, of replacing the vaccine matter which may be defective in quality or deficient in quantity, with a prophylactic furnished by the epidemic itself. In 1832, M. Brachet (of Lyons), starting with the idea, that the vaccine eruption probably owed its properties to the milk contained in the breast where it was developed, inoculated three young infants with a mixture, in

equal parts, of milk and variolous pus. These three patients were put in a ward where a young girl infected with confluent small-pox had just been admitted. The infants escaped; but each became affected round the punctures with an eruption precisely similar to that produced by the vaccine virus, and which remained local.

New experiments have been recently tried at La Charité of Lyons by M. Bouchacourt, Surgeon-in-Chief, and to these we shall direct attention.

Equal parts of cold milk and variolous pus taken from the pustules in the vesicular stage of naturally-developed small-pox, were mixed upon a piece of glass. Punctures were made in each arm with a clean lancet charged with the liquid. Five infants were directly inoculated. Three were inoculated successively from arm to arm with the liquid contained in the pustules resulting from the first inoculation: primary transmission. Three were inoculated from arm to arm with the liquid obtained from these new essays: secondary transmission. Four were inoculated from arm to arm with the liquid coming from this second indirect inoculation; tertiary transmission; success, as with the preceding. Three were inoculated with the liquid collected from the pustules produced by the first transmission, and preserved eight days; two with the liquid preserved eleven days; and, finally, one infant was inoculated with the liquid coming from the pustules produced by this last experiment.

Of these twenty-one children, of ages varying from eight days, five months, and eleven years, eighteen presented pustules precisely similar in character and duration to those of cow-pox, limited to the seat of puncture.

In two newly-born infants, the circumference of each pustule offered, about the sixth day, one or two smaller pustules; but these disappeared as the mark of inoculation faded.

In another child, aged five months, there followed four pustules scattered over the neck and shoulders. They were small, vesicular, and not depressed, and disappeared with the pustules produced by inoculation. This infant was very susceptible, and the poison had been taken from a case of confluent small-pox; thus the phenomena were not more serious than those resulting from ordinary vaccination.

It then became necessary to test its power as a prophylactic.

Two of the children above-mentioned were vaccinated in the usual way eight or ten days after the disappearance of the phenomena resulting from the lacto-variolic inoculation; and at the same time two other children about the same age, but who had never had either small-pox or cow-pox, were vaccinated with matter coming from the same pustule. Vaccinia developed itself in the last in its common form. In the first, no effect ensued. A child previously vaccinated was inoculated with the lacto-variolous pus. The result was negative.

Commencing with this equivalence between vaccine virus and the lacto-variolous fluid, M. Bossu proposed a series of inquiries to deter-

mine—1st. From what form of small-pox should the virus for inoculation be taken? 2nd. At what phase of pustulation should it be collected? 3rd. At what age the operation is most fitted? 4th. What conditions insure success? 5th. Does the fluid coming from the lacto-variolous pustule admit of being preserved in an efficient state?

The interest attached to this subject, and the able manner in which it has been treated by M. Bossu are acknowledged; but further investigations are required before the practice can be sanctioned by the Profession.—*Journal Hebdom., March* 17.—*Med. Times and Gazette, April* 22, 1854, *p.* 412.

## AFFECTIONS OF THE EYE AND EAR.

### 136.—ON THE REMOVAL OF A PARTICULAR KIND OF OPACITY FROM THE CORNEA.

By H. Haynes Walton, Esq., Surgeon to the Central London Ophthalmic Hospital.

[The employment of practical surgery in the treatment of opacity of the cornea is of great antiquity. Recently the subject has been more discussed, and there is no doubt that by this measure we are enabled to alleviate a condition which is commonly considered as incurable. The following case illustrates the treatment.]

Elizabeth Wheeler, aged 29, became a patient here so long ago as 1845; attended me for some months, then resorted to some other ophthalmic institution; and ultimately replaced herself under my care in the summer of last year—1852. Of the prior attendance I have no data; my notes apply to the re-entering. She was virtually blind, requiring to be led, and unable to perform any act demanding eye-sight. The centre of each cornea, to an extent a little beyond the pupil, (the left eye being the more affected,) was occupied by a dense opacity, slightly raised, and which gave in profile somewhat the appearance of "conical cornea." The form of each was irregularly spherical, with sharp outline. The colour, French-white, with dots or mottlings, not unlike those which appear on the back of the cornea in the affection called "aqua-capsulitis." Altogether, the appearance was peculiar and striking, differing from that of ordinary opacity, and conveying the idea of being due to a deposit of a substance probably cretaceous. The remainder of each cornea was transparent; otherwise the eyes seemed healthy. When the pupils were dilated, she could see to move about in the house alone; but there was not sufficient sight for any employment.

Nothing of her history of any value could be gathered, and a long examination elicited merely that, from childhood, she had been subject to inflammation of the eyes, and her blindness was of about ten years' duration.

Reflecting on the insufficiency of previous treatment, and on the physical character of the disease, I concluded that I had before me a case that warranted operation. I decided to employ the miniature gouge, which, as you know, I generally use to remove foreign substances from the cornea, and to pick away, as it were, the opacity. This I considered safer than to use a knife.

I selected the right eye, picked away at the outer margin of the opacity, detaching some, and was not a little gratified to find that it was superficial, and, as I hoped, not deeper than the anterior elastic lamina. Finding my attempt successful, the opacity reduced, and transparency of the cornea thus far restored, I repeated my little process four times, at intervals of a month, and operated twice on the left eye. Now, there was vision enough with the right for her to read large type, and with the left she could move about alone. Still, in both, especially the left, some opacity remained.

She ceased to attend me from this period till the present summer, when I operated twice more on the right eye, and nearly, but not quite, established a clear cornea, a small spot of opacity passing deeper than I deemed it prudent to penetrate. The left eyeball, too, was scraped a few times, and here, also, a central deep bit resisted removal.

To conclude the report,—the appearance of the eyes is so far natural, that it needs a careful examination in a favourable light, to detect the remaining opacities. The form and outline of the corneæ are normal, and their entire surfaces reflect the light. Vision is nearly perfect. With either eye she can thread a common sewing-needle, (No. 6,) but the left is rather the more perfect.

As this is the only case of the kind of which I have personal experience, I have little to add to the facts that it affords.

Perhaps the first points of practical import that demand remark, are the fitness of the case for the means used, and the signs by which such cases may be diagnosed. Concerning the first, the opacity being raised, and to all appearance of an earthy nature and superficial, induced me to interfere. I suspected that there was a circumscribed deposit of a foreign substance, which could be removed, just as one would extract a particle of iron, or any other extraneous matter, imbedded in the cornea. As to the second, I trust it is sufficient to put you on your guard to prevent you from mistaking small staphylomata of the cornea, or fungous growth from the conjunctiva, for this affection. You must be observant to prevent such errors. It is by personal observation alone that you can learn their distinctive characteristics. Of the precise nature of the substance scraped away, I cannot speak, as neither minute chemical nor microscopic examination was made. I did not detect any grittiness with the instrument, but this does not disprove an earthy nature.

I must tell you that this class of treatment is not restricted to opacities that are raised. So long as we have tolerable assurance that

the loss of transparency of a part of the cornea is due to deposit of earthy material, there can be no reason against operating, although such deposit does not interfere with the natural outline of the part. At the same time, the opposite state renders diagnosis more certain, insomuch as it goes to prove that there is some material superadded. Nor does the practice end here; it has been applied to opacities the result of cicatrices from loss of substance of the cornea, or from opaque deposit, the consequence of inflammatory attack; but I should be travelling away from the case before us to enlarge on this; you may find a full account of the subject in my Work on 'Operative Ophthalmic Surgery,' in the chapter on the removal of opacities of the cornea by operation. I shall, therefore, confine myself to a short statement from Mr. Spencer Wells, who was present at one of the occasions of my "scraping." Mr. Wells saw Malgaigne perform his second operation, of paring opacities of the cornea, at the Hospital of St. Antonia, Paris, 1845, as follows:—He made an incision above the upper edge of an opacity, which covered the lowered part of the cornea, and divided the external laminæ. He then fixed the edge of the opaque portion with fine forceps, and on raising it this peeled off very easily, and the separation was completed by another incision round the lower edge. Mr. Wells saw the first patient upon whom M. Malgaigne had operated six months before, and the cornea was perfectly transparent. Mr. Wells tells me that he has himself repeated this operation in two cases, with equally favourable results.

You should realise to your mind, that this application of practical surgery has reference to a portion of the eyeball, about the thickness of one's thumb-nail, and to separate the component parts of which, even on the dead eye, demands exquisite manipulation.

Let us now inquire a little into the conditions essential to the success of scraping the cornea. It is necessary that that portion of it posterior to the operation, do retain its transparency, and that the repair of the injury inflicted by the instrument be effected by transparent material. I imagine that little is to be apprehended from failure in the former, and the fulfilment of the latter must, I conclude, depend on the depth to which the true corneal tissue, the laminated part, is penetrated.

I strongly suspect that the perfection of repair differs in the two instances of loss of structure from ulceration, and from wounds, being by far more complete in the former. That a breach by ulceration, provided it be small, which will penetrate far into the laminæ,—nay, even go through them,—may, under favourable conditions, be filled by a material in no respect inferior in transparency to the original structure, while the removal of any of the laminæ by art, or the separation of them, must be attended with the greatest risk of opacity, and that in proportion to the extent of the wound. It is said that Malgaigne, who made a great stir about the operation at the time of its revival among educated surgeons, for it seems that it had lapsed into the

hands of itinerant oculists, sought to convince himself of its practicability by removing laminæ from the corneæ of animals, and obtained success that encouraged him to operate on man. The chance of inflammation of the cornea supervening on any of these operations, and so spoiling that which had been transparent, must be taken into the general account in deciding on the mechanical treatment of opacities. The dread of this was the reason of my proceeding cautiously and in so piecemeal a manner, effecting by many stages what might perhaps have been accomplished at once, or at least by much fewer operations. I have nothing to regret from my caution. But slight action followed each of the applications of the gouge, and the effect so caused passed off in two or three days. It is probable, judging from the result of the operation, that the instrument never penetrated beyond the anterior elastic lamina. The restoration of epithelium, always rapid in slight abrasions of the cornea, was quickly effected.—*Medical Times and Gazette, Nov.* 5, 1853, *p.* 469.

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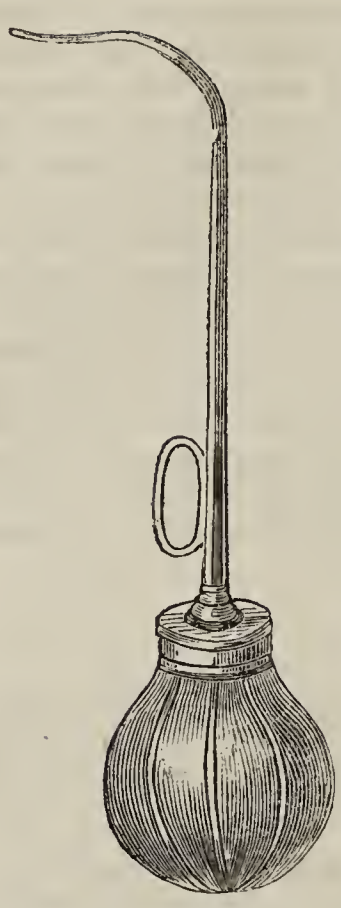
137.—*Pathological Remarks on the kind of Palpebral Tumour usually called in England, Tarsal Tumour.* By H. Haynes Walton, Esq.—[Mr. Walton describes the intimate structure of one of these tumours as follows:]

It consisted externally of a dense fibrous cyst, continuous with the fibrous tissue of the lid; within this a layer of fibro-plastic matter, soft, pink, abundantly supplied with vessels from the fibrous cyst, composed of fibro-plastic cells, with a very little intercellular fibrillary matter; within this a thin pellucid cyst, containing a puriform fluid, made up of pus globules, epithelium cells loaded with oil, and in the centre a perfectly round pellet of sebaceous matter. In conclusion, he suggests the following to be the order of development—first, the formation within a Meibomian follicle of a pellet of hard sebaceous matter; secondly, the secretion of a more copious epithelium and fluid matter around; thirdly, the addition of fibro-plastic matter around the obstructed gland follicle, distending the loculus of fibrous membrane into a cyst. This, together with a dissection of other tumours of the kind, as also the structure and relation of the Meibomian glands and their ducts, were illustrated by accurate drawings. Mr. Walton suggests the term Meibomian tumour. In a postscript to the paper he advises that whenever the Meibomian tumour takes an outward direction, and calls for the exercise of practical surgery, it is better to divide it on the outside, squeeze out the contents, and pull away the cyst with a pair of forceps. He adds that there need be no fear respecting the formation of a scar, provided the incision be made horizontally, and the edges accurately brought together by a plaster.—*Lancet, Feb.* 4, 1854, *p.* 137.



138.—*New Instrument for Injecting the Lachrymal Sac.* By Mr. Obre.—The extreme difficulty, if not impossibility, of introducing fluid into the lachrymal sac, in cases of chronic inflammation, with Anel's syringe, passed through the puncta, induced Mr. Obre to have a silver canula constructed, the same shape and size as the sound of Gensoul, to which is attached a small vulcanized india-rubber bag, about the size of a nut, into which the injecting fluid is introduced. The canula having been passed through the nasal duct by the inferior meatus, slight pressure of the thumb on the india-rubber bag propels fluid. No more difficulty is found in passing this instrument than the ordinary sound, a little practice soon overcoming any difficulty. It is necessary there should be a canula for either nostril; the india-rubber bag is made to screw on either as required. Mr. Obre stated he had not brought this instrument before the notice of the profession until he had first given it a fair trial and proved its utility. It is made by Mr. Coxeter. The diagram represents the invention.—*Lancet, Jan.* 28, 1854, *p.* 111.

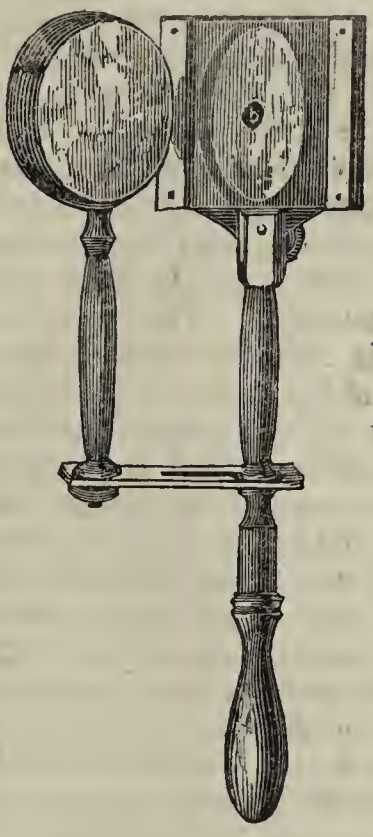
## 139—M. KOTZIUS'S NEW OPHTHALMOSCOPE.

By T. Spencer Wells, Esq.

The instrument of Helmholtz is undoubtedly a great assistance in examining the condition of the refracting media of the eye. The condition of the lens and its capsule and of the vitreous humour can be much more accurately defined by its use than by ordinary observation; but, after numerous trials, I became convinced that its illuminating power is far too feeble to enable one to see at all distinctly anything whatever on the retina, and that an instrument more recently contrived by M. Kotzius, of Leipzic, is immeasurably superior in this respect. The instrument of Helmholtz is preferable for examining the refracting media, and it possesses the great advantage, that it may be used with an undilated pupil without producing much contraction; while the intense light from Kotzius's instrument requires full dilatation, or the pupil becomes closely contracted. But, for the grand object of *examining the condition of the retina* itself, this latter instrument is very far superior to any other that I have seen.

This instrument consists, as may be seen by the accompanying woodcut, of a perforated mirror and a lens. The rays of light from a

lamp are concentrated by the lens and thrown on the mirror. This is held before the eye to be examined, and the rays are thrown through the pupil on to the retina. The unabsorbed rays return in the same direction, and are received by the eye of the observer, which is behind the mirror, at the spot where it is perforated.



In a healthy eye, the part behind the pupil is absolutely dark. Even when the lens and vitreous humour are clear and transparent, no ordinary examination, even when the pupil is dilated, can afford any information as to the appearance of the retina. Without some artificial assistance, we cannot illuminate the retina and also see the illuminated part. The rays of light return from the retina in the same direction as they were thrown on to it, so that we cannot bring our eyes into the direction of the rays of light returning from the retina without at the same time cutting off the supply of those rays. But, by the aid of this instrument of Kotziüs, the rays are reflected at an angle upon the mirror, are then conveyed to a focus on the retina by the media of the eye, and the unabsorbed rays, on leaving the eye, return to the mirror whence they came, and are also received by the eye of the observer.

When the instrument is to be used, the pupil is dilated by atropine, if not naturally dilated. The patient is seated in a dark room near the corner of a table, on which a bright lamp is placed at the level of the eye. The surgeon sits before the patient, and screens the face of the latter by an upright shade, so that the eye is the only illuminated part. Holding the mirror opposite the eye, he then adapts the lens in such a manner that a bright concentrated light is seen to fall on the pupil. Then he applies his own eye to the back of the mirror. The instrument is held at different distances from the eye until a clear view is obtained, and then the patient, by moving his eye in different directions, exposes the different parts of the retina to view. This appears rather difficult at first, but a very little practice enables one to find the proper position of the instrument. When the retina is not clearly seen, although the pupil is well illuminated, a concave glass is interposed between the mirror and the observed eye, by the hand not employed in holding the instrument.

Examination of the retina in this manner is very interesting. Bloodvessels are first distinctly seen ramifying upon it, and by tracing

them from the smaller branches to the larger roots, we arrive at the point where the optic nerve enters. This differs in appearance from the rest of the background of the eye, as it is not covered by pigment, or a network of vessels, but a sort of transverse section of the nerve here lies open to view, with a few fine vessels passing through it. The arteries and veins of the retina enter and leave near the inner part. Sometimes a portion of the vessels may be seen concealed in the substance of the nerve itself, showing that this substance is transparent during life. The two orders of vessels are distinguishable from each other as the blood is of a brighter colour in the arteries, and the walls of the latter and their first subdivisions are thicker than those of the veins. Pulsation cannot be distinctly recognized so far as I have been able to discern, though some observers fancy they can see it. The first divisions of the vessels border the inner side of the optic nerve, and then extend all over the field of the retina. The appearance of the red vessels on the illuminated base is really beautiful. Helmholtz remarks, that, close to the inner side of the nerve, he has always remarked a small semilunar strip of shadow, which appears to be from a fold of the retina. This appearance is universal, and is doubtless produced by the plica semilunaris. In most parts of the eye the base appears of a yellowish red, with a brighter red round the optic nerve, and darker the further we pass from it,—not of an equal colour, but as if with small darker patches. The point of direct vision (macula lutea, or foramen of Soemmering) has a peculiar appearance. The eye is directed exactly upon the ray of light, and the retina is seen at that spot to be darker, greyish-yellow, without admixture of red; and no traces of capillary vessels can be seen on it. It is difficult to make this out without practice, because the reflection from the cornea is apt to destroy it; while this reflection does not interfere when the eye is turned to either side for the examination of the lateral portions of the retina.

As an auxiliary in diagnosis, the ophthalmoscope must prove very valuable, as anything opaque before the retina must mask its vessels. Cloudiness of the vitreous humour, according to its degree, will obscure the view of the vessels of the retina. Opacity of the lens or of its capsule would, of course, act in the same manner.

But it is in assisting the study of the pathology of amaurosis that the chief utility of the instrument will be found. Dr. Donders has already distinguished a limited effusion of blood between the choroid and retina, or in the latter membrane itself with chronic inflammation, —in one case of insensibility of about two-thirds of the retina. After examining a great many sound eyes, I have myself detected, in various forms of partial or total amaurosis, congestion and varicosity of the vessels of the retina, partial removal of the pigment in patches, and exudations into the substance of the retina, or upon its surface. Representations of these appearances, when accurate, are exceedingly beautiful; and the objective symptoms of amaurosis thus become

admirable subjects for the artist. When they have been thoroughly examined and carefully recorded, they must contribute important information towards the history of the disease which Mr. Dalrymple so justly said has "yet to be written."—*Med. Times and Gazette, Sept.* 10, 1853, *p.* 265.

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## 140.—ON A NEW INSTRUMENT FOR THE REMOVAL OF POLYPI FROM THE EAR.

By Joseph Toynbee, Esq., F.R.S.

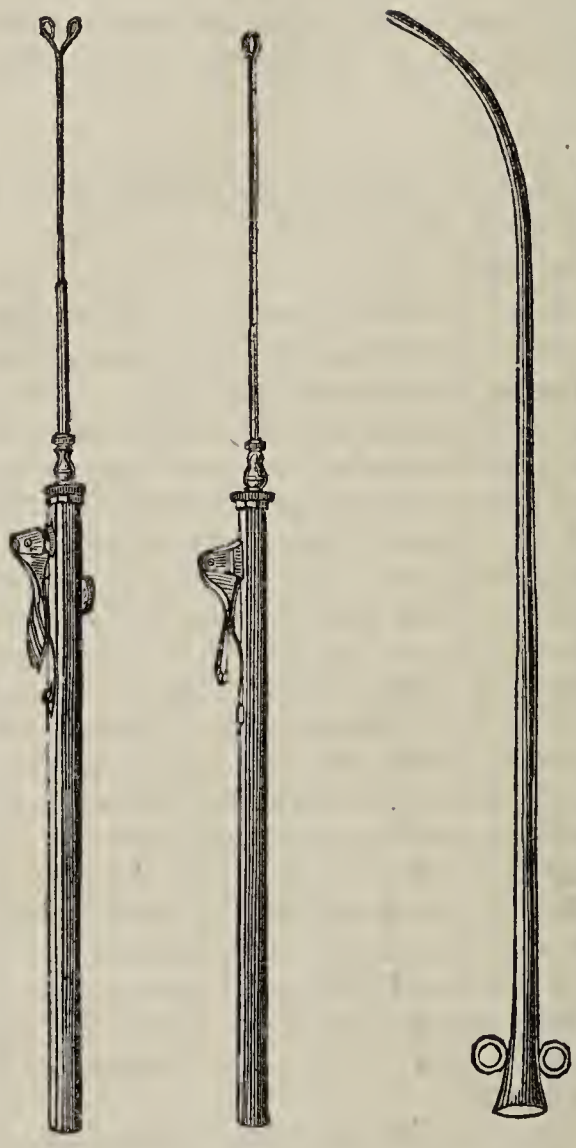
Various instruments have been invented having for their object the removal of the small vascular polypi from the external auditory meatus. Of these, by far the best is the snare of Mr. Wilde, which is thus described at p. 420 of that gentleman's work on 'Aural Surgery:' —It consists "of a fine steel stem, five inches long, and bent in the centre, with a moveable bar sliding on the square portion near the handle, which latter fits over the thumb. The upper extremity is perforated with holes running parallel with the stem, and loops at the angle serve the same purpose. A fine wire, fastened to the cross-bar, passes through these loops and holes; it should be of such length that, when the cross-bar is drawn up tight to the handle, the ligature is fully on the stretch.....In using it, the cross-bar is pushed forward, and a noose made of the wire at the small extremity, of sufficient size to include the morbid growth, which it is then made to surround, and towards the root of which it is pressed by means of the stem; the cross-bar is then drawn up smartly to the handle, while the point of the stem is pressed downwards; and it never fails of either cutting across or of drawing with it whatever was included in the noose."

The difficulty attendant upon the use of this instrument consists in getting the wire noose around the polypus, which frequently is of a very small size; another disadvantage is, that it cuts off a portion of the growth instead of withdrawing it entire.

The instrument which I have been in the habit of using during several months at St. Mary's Hospital, as well as in private practice, with most satisfactory results, I have called the *lever ring forceps*, and it is on the principle of M. Luer's scissors. In the interior of the ordinary tube is the delicate steel rod, the end of which is split into two portions, to each of which is fixed a small oval ring, measuring four or five lines long, and from two to three broad. These rings, (the inner surfaces of which are flat,) as seen in Fig. 1, separate from each other when the lever is not pressed; but, as seen in Fig. 2, when the lever is pressed, the rings are brought into contact. The instrument is introduced into the meatus with the rings apart; these may be made to enclose the polypus or a portion of it between them, and then, by pressing upon the lever, the polypus is seized, and can be drawn out.

For the removal of the larger polypi, I am in the habit of using the *ring forceps*, which are made after the fashion of ordinary dressing

Fig. 1. Fig. 2. Fig. 3.



forceps: but, instead of teeth, there is a ring at the end of each blade. The advantage of the rings is, that a portion of the polypus is securely held within them, while, with the ordinary dressing forceps, the polypus is generally broken up, and the removal of the roots is impracticable.

I may take the present opportunity of suggesting, that the *Eustachian catheter* (Fig. 3.) should be made oval instead of round. The advantages attendant upon the oval shape are, that it passes through the nose with more facility, and with less uneasiness to the patient; and that, when introduced into the faucial orifice of the Eustachian tube, the flattened surfaces are in apposition with the flattened walls of the tube; and the discomfort produced by the pressure of the convex surface in the rounded form of the instrument commonly in use is, at least partially, avoided.—*Med. Times and Gazette, Nov.* 19, 1853, *p.* 526.

# MIDWIFERY,

## AND THE DISEASES OF WOMEN.

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### 141.–ON THE MANAGEMENT OF LABOUR CHARACTERIZED BY DEFECTIVE UTERINE ACTION,

#### AND THE COMPARATIVE VALUE OF ERGOT OF RYE AND GALVANISM IN OBSTETRIC PRACTICE.

By Dr. Robert Barnes, Lecturer on Midwifery to the Royal Free Hospital Medical College.

Defective uterine action does not always indicate a resort to the ordinary means of stimulating the uterus. There are no occasions in obstetric practice in which nicer discrimination—a more accurate diagnosis—is required, before deciding upon the means of relief, than in those cases where the contractile energy is at fault. Our choice must frequently lie between the use of agents calculated to excite contraction, and those which have a directly opposite effect. We are frequently called upon to determine whether it be better to rouse the energies of the uterus, or to resort to manual or instrumental assistance. Upon our interpretation of the symptoms, and our appreciation of all the circumstances of the case, our selection of the mode of interference will depend; and upon this selection may hang the safety or the destruction of the patient.

If it be difficult to solve the preliminary question, whether we should endeavour to excite the uterus to action or not, how cautious ought we not to be in our choice of the particular means for inducing contraction, when that course is determined upon?

*The action of Ergot of Rye, and the Objections to its use.*—There is one agent frequently—much too frequently—resorted to on account of its power of exciting uterine contraction, the ergot of rye. A principal object of this paper will be to exhibit the dangerous properties of this drug; to show what little mastery we have over its action when once administered, and the consequently fatal results attending an error in diagnosis—a mistake in the application of the drug. If I further succeed, as I hope to do, in proving that we possess another agent at once more effective, more manageable, and more safe, and capable of useful application in all those cases in which ergot of rye is commonly employed, I shall not have uselessly engaged the time of the reader.

The ergot of rye is capable, under certain circumstances, of producing the most marked and decisive effect in exciting the uterus to

contract. An agent possessing such a power, it need not be said, is liable to abuse. It is notorious that many practitioners carry this drug in their pockets, esteeming it an indispensable adjunct to the practice of midwifery. It is amongst midwives—necessarily the most ignorant of obstetric practitioners—that this custom chiefly prevails. That this should be so is most deeply to be deplored. No agent, no species of interference in natural parturition, supplies more frequent or more distressing illustrations of that maxim, the most trite, the truest, and the most neglected, "a meddlesome midwifery is a bad midwifery," than does the ergot of rye. For one woman who has derived substantial benefit from its use at the time of labour, it may be confidently assumed that one hundred have found reason in long-enduring subsequent sufferings to rue the hour when they were made to swallow the nauseous draught under the delusive promise of a speedy release from pangs, hard indeed to bear, but mostly beneficial in their result.

In discussing the uses of ergot in obstetric practice, I think it more convenient to postpone the consideration of its use in inducing premature labour, and to refer in the first place to its employment in labour at the full time. When ergot is administered before the expulsion of the child, the effects are usually as follows:—In virtue of its peculiar property of exciting contraction of the uterus, in about fifteen or twenty minutes the uterus is perceived to be under the influence of the drug. A spasmodic contraction begins in the uterine muscular fibres. Whether this is excited by the direct stimulus of an ergotic element carried in the blood to the uterus, and thus acting immediately upon the uterine nerves or muscular fibre, or whether the ergotic element acts primarily upon the spinal marrow—that is, whether the first step in ergotic labour is of excentric or of centric origin, it is not easy to determine. But it is quite certain that when once the contractile energy of the uterus is roused, that other actions, violent in proportion to the efforts of the uterus, are brought into operation. Secondary diastaltic or reflex action of the expiratory muscles is induced with a violence in direct relation to the violence of the primary uterine contraction. If there be no invincible obstruction to the expansion of the mouth of the womb and the expulsion of the child, the child will be driven with precipitate fury through the pelvis and os externum, at the imminent risk however of lacerating the perineum, which has had no opportunity of expanding gradually and safely as it does before the normal pressure of a labour completed by the natural powers. It should be respected as a fundamental axiom in obstetrics, that as child-bearing is a natural function, so is its safe fulfilment ensured by adequate contrivance. Each step in the long process of parturition—from the first action of the uterine muscular fibres which determines the expansion of the os uteri, to the final contractions which expel the placenta and close the open mouths of the uterine vessels—is only one of a gradation disposed according to a pre-ordained order, with a view

to the final result. To invert or to disturb this order, as the use of ergot in natural labour can hardly fail to do, by anticipating the due period of the expulsive pains, is to disconcert all the arrangements of nature; to throw the whole process of parturition into confusion; to resign to the uncontrollable fury of spasmodic action that process which depends for its safe completion to mother and child on a regular co-ordination of physiological actions, in which each stage is essential to the proper progression of the succeeding one.

But if an unforeseen obstruction exist, then more terrible results must be apprehended. When an obstruction occurs in the course of labour, it frequently happens that nature takes the alarm; the uterus, so to express it, seems gifted with a kind of prescience that the obstacle is beyond its power to overcome. It therefore intermits or ceases those contractile efforts, which, if continued, would entail either rupture of its own structure or impaction of the child: the contractions become abortive. Now, when ergot is given, it is presumed that a reason is discovered for its use in the intermission or cessation of the pains. This intermission or cessation may arise—

1st, From this prescient reluctance of nature to act in the face of a mechanical obstacle.

2nd, From *exhaustion* in consequence of long-continued unavailing efforts.

3rd, Because the proper time for expulsive efforts has not yet come, and the proper physiological stimuli to diastaltic action have not come into operation.

Now, in every one of these cases the action of the ergot of rye is likely to be prejudicial; first, if in the case of an obstacle to the progress of the child, ergot be given, and its peculiar action ensue, (which fortunately is not always), then the uterus contracting, and vainly contracting, upon the opposing force, is goaded by opposition into more furious efforts. Before its ungovernable struggles something must give way. Rupture of the womb is one probable termination; or the child may be jammed in an unfavourable position into the pelvis and there impacted, and convulsions and death may close the scene. All this I have actually witnessed.

When contraction has ceased from exhaustion, to what purpose will you lash the jaded uterus to renewed exertions of which it is incapable? In such a case ergot can manifestly have none but the most injurious effect. And yet it is in such cases that it is frequently resorted to.

It may be urged that these are not fit cases for the use of ergot, and that its injurious action here cannot be advanced as an argument against its employment in proper cases. This may be so. But then how difficult is the diagnosis—how fatal a mistake! And if ergot be a drug in such common and extensive use as it is known to be, and that amongst the most ignorant, how can we expect the diagnosis to be just, or that fatal errors shall not be frequently committed?

The uncontrollable action of the drug when once administered, added to the difficulty of diagnosis, constitutes the gravest objection against it. A mistake is irretrievable; once given the case is as it were out of our hands. We know of no certain means of mitigating or counteracting its effects when they turn out to be violent or altogether injurious. I propose to pass in rapid review some of the proofs of the dangers attending the use of ergot in obstetric practice, dangers too much overlooked, if not ignored, by many.

I will first consider the *dangers to the mother.*

*Rupture of the uterus.*—Dr. Trask, who analysed the histories of all the cases he found recorded, found that in a large proportion ergot had been given. It is quite true that in many of these cases the ergot was given in contravention of the rules usually laid down. In some there was obstruction to the labour from distortion of the pelvis, malposition or mal-proportion. But this consideration does not diminish the value of the general fact, that ergot has frequently caused rupture of the uterus. If given before the head has descended into the pelvis, who can determine, even in the case of a well-formed pelvis, that an obstacle will not arise in the unusual or morbid enlargement of the head? If given even when the head is pressing on the perineum, the os perfectly open, and all those conditions apparently present which are held to justify the resort to ergot, who can tell whether a second or a third child may not be behind? And who would knowingly goad the uterus into spasmodic fury in a case of twins? How great is the probability that the second child would be driven into the pelvis in a transverse position? Even up to the moment when the head is about to emerge from the outlet the use of ergot then is not safe, and I shall presently show that it is not necessary.

The next accident is *rupture of the perineum.* The danger of this accident is so obvious that I need not do more than record it.

*Lacerations of the os uteri,* subsequent inflammation, and hypertrophy of the cervix, are events which I have frequently traced back to ergotic labour.

*Prolapsus and procidentia of the uterus and bladder.*—These distressing affections are not unfrequently the secondary result of inflammation and hypertrophy of the cervix uteri; but even when not thus the indirect consequence of ergotic labour, they may result directly from the violent dislocation occasioned by ergotic contractions. I have known a striking case of this kind.

*Case* 1. A woman had ergot given to her in a perfectly natural labour, to expedite delivery. It brought on one continued pain of a character and intensity such as she had never experienced before, and during which, to use her own expression, she felt as if "the whole of her body was coming from her." The child was violently extruded, and the uterus and bladder were driven down by the secondary excited action of the expiratory muscles into the pelvis, the bladder remaining outside the labia pudendi. It was not until some time had elapsed,

and careful general and local treatment, that these organs were restored to their normal position.

Ergot may induce certain injurious effects upon the mother's system. Dr. Hardy relates, that in "several cases where the circulation of the patient had undergone depression from the action of ergot, the effect continued for several days, notwithstanding in some instances inflammation of the uterus followed delivery, and the uterine tumour not unfrequently remained much larger than natural, even when there was no inflammation." Dr. Hardy also quotes the eminent authority of Dr. Johnson to the fact, that "the volume of the uterus is often found much greater than after ordinary labours, imparting to the hand almost the feel of a uterus before the expulsion of the placenta."

Drs. Hardy and M'Clintock have observed a marked diminution in the frequency of the mother's pulse in from fifteen to twenty minutes after the administration of ergot. And all concur in noticing the dangerous depression following the use of ergot when given in cases where the powers of the system have been reduced by hemorrhage. In one such case ergot was almost immediately followed by most alarming symptoms, and depression requiring the most powerful stimulants. In several cases the depressed state of the circulation continued several days.

Dr. Ingleby relates the following case:—"A highly-esteemed friend once found it necessary to pass his hand into the uterus to remove an adherent placenta, the ergot of rye having been previously administered. The introduction was carefully performed. The straining and opposition to his efforts on the part of the woman were exceedingly great, and at the moment when the operator's hand had reached the organ, my own hand making counter-pressure on the abdomen, the patient became violently convulsed, and died in less than a minute." The cause of the convulsion, Dr. Ingleby expressly states, was not loss of blood.

We will now consider *the injurious effects of ergot upon the child.*

Drs. Hardy and M'Clintock, observed that the pulsations of the fœtal heart underwent a similar diminution in frequency to that witnessed in the mother, and that this was succeeded by irregularity and intermission, and that it became *inaudible.* Dr. Hardy, Dr. Beatty, and others, after careful observation directed to this point, assert, that unless the child be born within a limited interval from the administration of the drug, it will be still-born. The excessive mortality of the children in ergotic labour is a fact well-established, although disputed by some practitioners enthusiastic in the praises of ergot. The Prefect of the Seine had observed an almost regular annual increase in the number of still-born children, and he was informed that in a large number of these cases ergot of rye had been given during labour. He put the following question to the Academy of Medicine:—"What may be the influence of ergot of rye on the lives of infants, and on the maternal life?" The report made by a

commission of the Academy, consisting of Orfila, Adelon, Villeneuve, Mérat, and Danyau, contained the following conclusion:—"Ergot of rye administered improperly causes death to the fœtus, and injury to the mother." The immediate source of danger to the fœtus is either the toxical property imparted to the blood, or the interruption to the circulation through the uterus and the placenta, occasioned by the long-continued contraction of the uterus. In this latter case the child may perish from asphyxia. These are the usual sources of danger; but there is a third. The long-continued and violent pressure to which the child is subjected during ergotic labour may compress the brain beyond the limit of endurance, or it may impede the circulation through the umbilical cord. The toxical agency of the ergot upon the fœtal heart is exemplified in the observations already referred to of Dr. Hardy. The influence of contraction of the womb in arresting the circulation through the placenta, and consequently the fœtal circulation, has been demonstrated to me by actual observation. The case is so interesting, and the opportunity of making a similar physiological experiment must be so rare that I will cite it in detail.

*Case* 2. A woman, with an extremely contracted pelvis, and who ten years before had been delivered by craniotomy by Dr. Waller, consulted me about her condition. She was again pregnant. I became satisfied of the propriety of inducing premature labour; and the agent I determined upon employing was galvanism. Having waited until it was estimated that seven months of gestation had passed, the operation was commenced. I shall have to relate presently the course of the labour under the use of galvanism, and may therefore pass at once to the particular point it is my present wish to illustrate. When labour had set in, and the os uteri was partially expanded, the cord came down into the vagina. The pains being of a languid, uncertain character, the galvanic stimulus was kept up. The pulsations of the cord were strong, and 80 in the minute. Galvanism was applied during the pains; the contractions were sensibly increased in force, and during the contractions the pulsations in the cord became intermitting, and occasionally stopped. As the pain went off, and as the galvanism was discontinued, the pulsations resumed their former strength and regularity. I then tried the effect of galvanism in the absence of a pain. Contractions were induced, and the intermittence of the pulse followed.

I then observed the effect of a pain uninfluenced by galvanism. The intermittence of the pulse was the same. I repeated these observations several times, and always with the same result. Towards the termination of the labour a strong expulsive pain came on, during which, the head, which was very small, was driven into the vagina, without, however, causing any pressure upon the cord. During the strong pain the pulsation in the cord stopped entirely, but returned when the pain went off.

But fœtal circulation is arrested during the physiological contractions

of the womb for a short time only, and is completely restored during intervals sufficiently long to ensure the safety of the child. In ergotic contraction the interruption is total, unremitting, and protracted. Shall we wonder if the child occasionally perishes from asphyxia?

Dr. Ramsbotham, whose experience in the use of ergot in inducing premature labour is probably greater than that of any other practitioner, says:—"After a great number of trials I observed that although the mothers recovered as well as if through an ordinary labour, their systems not being in any sensible degree injuriously affected by the drug, yet that the proportion of children still-born was greater than when the membranes were punctured. This I attributed to the baneful influence of the medicine upon the fœtus." Dr. Ramsbotham modified his practice in consequence. He further says that "Wright's experiments prove decisively that the medicine has a most prejudicial influence upon the young *in utero*, even to their destruction."

If the child survives the perils of ergotic labour, is it free from subsequent danger?

Dr. Ramsbotham says: "It has happened to me in four different instances to witness the death of the fœtus, a few hours after birth, by convulsions, after the induction of premature labour by ergot."

These facts, which might be greatly multiplied, prove beyond a doubt that ergot of rye is capable of exerting the most deplorable and even fatal mischief both upon the mother and the child. It follows from this circumstance, the uncontrollable nature of its action, and the difficulty that exists in many instances of forming an accurate diagnosis, that the use of the ergot of rye in obstetric practice should be reduced within the narrowest possible limits. I believe that the restrictions to its use must be carried very much further than is generally prescribed. It is a matter of extreme doubt to me whether it should ever be administered before the child is born; and in cases of uterine inertia after delivery, accompanied with retention of the placenta or hemorrhage, it has been shown to be by no means free from objection. But the most effectual way of attaining the object I propose, of minimising the use of ergot in obstetric practice, is to show that we possess other means at once more safe, more effectual, and capable of successful application in all those cases in which the ergot has been recommended.—*Lancet, Nov.* 5, 1853, *p.* 433.

[Dr. Barnes, passing over all those slighter stimulants to uterine action such as restoring hope and confidence in the patient, pressure of the hand on the womb, application of cold, &c., &c. proceeds to consider the value of galvanism as a substitute for ergot.]

From time to time many valuable but isolated observations upon the use of galvanism in different cases of obstetric practice have been published. But no systematic attempt has been made to prove that in galvanism we possess an agent capable of universal application wherever we require a safe and effectual stimulus to the muscular

structure of the uterus. I shall consider the uses of galvanism in the successive epochs of gestation and parturition, beginning with its use in the induction of premature labour.

*The Use of Galvanism in the Induction of Premature Labour.*—In 1803, Herder suggested the use of electro-galvanism for the induction of premature labour. In August 1844, Drs. Horninger and Jacobi succeeded in bringing on labour by the electro-galvanic apparatus after other means had failed. The application was immediately followed by uterine action, and the child was born in an hour from the commencement of the operation. A successful case under the hands of Mr. Demsey is also referred to by Dr. Golding Bird. My researches into what has been written on the subject have not been sufficiently minute to enable me to say that no other similar cases have been recorded. In January, 1851, I myself had an opportunity of testing the efficacy of this agent.

*Case* 3. I have already referred to this case for the purpose of illustrating the effect of contraction of the uterus upon the fœtal circulation. The result, although perfectly satisfactory, was by no means so speedily accomplished as in the case of Horninger and Jacobi. I had previously endeavoured to bring on labour by puncturing the membranes, and inserting a sponge-plug in the cervix uteri. This proceeding was followed by no symptom of labour. On the 23rd of January I applied the galvanic battery for half an hour, placing one pole on either side of the uterus. Immediately after commencing the shocks the bladder was irresistibly emptied, to the evident annoyance of the patient. The womb was felt to become hard, and the patient herself was sensible of contractions and increased movements of the fœtus. The contractions did not continue on the cessation of the galvanism, and I therefore repeated the application on the 24th and 26th, for about an hour each time. On the 26th a "show" took place. On the evening of the 27th, slight pains were felt; the cord was presenting, a small loop coming through the os uteri, which was now dilated to the size of a shilling, but feeling rigid. She had had rather copious flooding in the day-time, but it had stopped. The head was felt lying on the pubis in front of the os uteri, the cord coming down in the free space behind it. On the morning of the 28th, the galvanism having been applied at intervals all night, the pains had increased. I have already mentioned how the galvanism increased or originated contraction. At nine A.M. the child was born. It was apparently not more than six months old. The patient had certainly reckoned falsely. The child's heart was pulsating; the chest made three or four convulsive heaves, at which the mouth opened, but no air seemed to enter: the lungs refused to expand; the walls of the chest were drawn in towards the spine. I endeavoured to excite respiration by the galvanic apparatus, but, although I could at will cause a respiratory *effort*, the child was evidently too immature to live. The womb contracted favourably, and the placenta being withdrawn was found healthy. The patient recovered without a bad symptom.

The excellent effect of galvanism in this case led me to recommend the use of the same agent to my friend Mr. Mansford, who has favoured me with the following account:—

*Case* 4. "The lady, whose case led me to attempt the induction of premature labour, was in the 41st year of her age, and the thirtieth week of her fifth pregnancy. On the 8th of November, 1852, having ruptured the membranes, I introduced one wire of the apparatus within the os uteri, and placed the other in contact with the spine. From the one introduced into the uterus I had removed the brass handle, and twisted the wire upon itself so as to form a loop sufficiently curved to ensure its remaining steadily in its proper place. I also carefully enveloped a considerable portion of this wire with lint, as well to protect the vagina from the twisted portion and extremity, as to prevent the galvanic current from being diverted from the uterus. I then increased its power until it produced 'the most severe cutting pains in the loins,' 'great bearing-down,' and 'a dreadful commotion in the womb.' These were my patient's own expressions. The operation was repeated on the 9th and 10th, each morning for half an hour; the effect, however, had not been as yet altogether satisfactory, as I had not been able to maintain a continuous action; but on the fourth morning, viz., the 11th, I remedied this defect, and kept up a continuous current for three-quarters of an hour, when my patient begged me to desist, which I did, and determined to wait a few days to see if this would accomplish the desired effect. Happily on the 14th, without any further interference, labour commenced, and terminated within four hours, in the birth of a living child, and not a single untoward symptom occurred spontaneously. It was altogether a most satisfactory case."

The foregoing results are directly at variance with the opinion of Dr. Golding Bird, who says—"The result I have arrived at is, that this agent, like the ergot of rye, and perhaps other *ecbolic* remedies, generally fails to develope uterine action *de novo*. . . . Hence, though I believe it will generally fail to induce premature labour, it will as generally succeed in stimulating the uterus to vigorous contraction after labour has actually commenced." In weighing this negative opinion, it should, however, be observed, that the latitude of qualification implied in the word "*generally*," deprives it of all precision of meaning.

It would lead me beyond my present purpose to discuss the relative advantages of galvanism and the douche recommended by Dr. Kiwisch, and other methods. I will simply remark, that whatever method be determined upon for the purpose of bringing on labour, the stimulating property of galvanism upon the uterus will be a most useful adjuvant.

I will briefly refer to the great superiority of this method over the use of ergot of rye. An unexpected obstacle to the expulsion of the fœtus may arise after the administration of ergot; there is, con-

sequently, danger of rupture of the uterus. How, for example, can we fortell that the child will not be driven into the pelvis in a transverse position? Secondly, there is the great improbability that the child will be born within any reasonable period after the administration of ergot; many doses are required; there is the risk of ergotism to the mother; and the peril to the child rises in proportion to the amount of ergot given; moreover, it is extremely uncertain whether the ergot will act at all.

*The Use of Galvanism in Inertia during the First and Second Stages of Labour.*—I will now illustrate the effect of galvanism in lingering labour from uterine inertia. An interesting case of this nature is recorded by Mr. Cleveland, which was brought to a close within fifteen minutes after the use of the electro-galvanic apparatus had been commenced. Mr. Houghton also relates four cases of arrested labour from atony of the uterus brought to a successful termination by the agency of galvanism. In three of these ergot had previously failed.

In a similar case I have myself experienced the like good effect, but I prefer citing the following account supplied to me by my friend Dr. Mackenzie:—

*Case* 5. "I was sent for one morning to a young woman who had been admitted in labour at the Paddington Infirmary, and on examination I found that the head presented. Although she had been several hours in labour, the os uteri was but little dilated. I saw her in the course of the same afternoon, but still found very little dilatation. At ten p.m. but little progress had been made. I now determined to try the effect of galvanism, and applied one pole of a single-current machine to the spine, and the other, by means of Radford's director to the neck of the uterus. The current was from time to time intermitted, and uterine action of a vigorous character was excited. In about an hour a fine living child was born. So vigorous were the expulsive efforts during the passage of the head through the os externum, that I was obliged to take particular pains to prevent rupture of the perineum. The impression left on my mind by this case was, that galvanism should not be employed except very cautiously in primiparæ, or in any other instance in which the perineum is rigid or imperfectly developed."

Galvanism may also be usefully employed in many cases of hemorrhage before the birth of the child.

A judicious application of this agent may, in many cases of arrest of the head from inertia, obviate the necessity of resorting to the use of the forceps.

*The Use of Galvanism in the Third Stage of Labour, and in Hemorrhage.*—We possess a greater amount of evidence of the value of galvanism in the third stage of labour. Dr. Radford has contributed many valuable observations, exemplifying the power of galvanism in exciting contraction of the uterus in cases of post-partum hemorrhage.

These are too well known to require to be cited. Mr. Houghton has added other cases which occurred under his own observation. The only instance I will adduce here is one which occurred recently to Dr. Mackenzie.

*Case* 6. "The patient had been upwards of forty-eight hours in labour, under the care of Dr. Keogh, who had called in Mr. Clark, by whom I was sent for. When I saw the patient uterine action had entirely ceased, and I found, on examination, that the head was impacted in the pelvis, the face presenting with the chin to the left cotyloid cavity. As the patient was exhausted, an opiate had been given, and as she was disposed to sleep, we agreed to meet again in some hours, and if uterine action did not return, to deliver by the forceps. At the appointed time no return of uterine action had taken place. I applied the forceps; the operation was accomplished with extreme difficulty, and the woman was delivered of a fine, large, living child. I left the patient shortly afterwards, but the next day, on meeting Dr. Keogh and Mr. Clark, I learned that great apprehension had been felt throughout the night as to the occurrence of hemorrhage, inasmuch as the uterus had remained flaccid and uncontracted, and at the time of my visit it reached above the umbilicus, and was very soft and flabby. I proposed galvanism, and applied one pole to the spine and the other to the neck of the uterus, occasionally intermitting the current. This was done for half an hour, and evident uterine action was excited, the uterus becoming harder and smaller, and on removing the poles two large coagula were expelled. The next day the uterus was more contracted and smaller, and no hemorrhage had occurred. Galvanism was again used for half an hour. The uterus certainly contracted under its influence. The following day no hemorrhage had occurred, and the condition of the uterus was such as not to require any further recourse to the agent. The woman from this time recovered in a most favourable manner." Dr. Mackenzie adds the following remarks, in which I entirely concur:—"It appears to me that the results of galvanism in this case were highly satisfactory, because coagula retained in the uterus, from atony of the organ, are not only calculated to occasion hemorrhage, but by undergoing a species of putrefactive decay, to give rise to fever and all the consequences of vitiation of the blood. Under such circumstances, I have known the hand forcibly introduced into the uterus many days after labour for the removal of such coagula, with very disastrous results,—results which this case shows may be obviated by having recourse to galvanism."

*Other Uses of Galvanism in Obstetric Practice.*—There is another case of not unfrequent occurrence in obstetric practice, in which galvanism may be of eminent service—temporary paralysis of the bladder following delivery. A case I have already related illustrates the power of galvanism in causing contraction of the bladder. Drs. Goodwin and Radford describe an interesting case, in which the catheter was employed two or three times a day, and could not be dispensed with

On Dr. Goodwin's suggestion galvanism was tried and *the first application proved successful.*

I would especially recommend the use of galvanism in those cases in which the action of the uterus has been unfortunately paralyzed under the influence of chloroform. In such cases I believe no other stimulus that can be applied will answer with equal certainty or efficiency.

I am also sanguine as to the value of galvanism in exciting respiration in asphyxiated children.

There is another class of cases in which galvanism promises to be of the greatest service. A most interesting case has been recorded in which Dr. Tyler Smith was enabled to produce expansion of the neck of the uterus, and to bring an intra-uterine polypus into view, so as to admit of the application of a ligature, by the application of galvanism after ergot had failed. I have also employed it with success for the purpose of causing the expulsion of hydatids. This case occurred in connexion with my colleague, Mr. Forbes, and I will relate so much of the account as bears on the question before us.

*Case* 7. Ann W., aged 42, had had eight children and three abortions. She applied to Mr. Forbes on the 17th of June last, having anasarca of the legs. Two months before, she suffered a burning pain in the region of the womb. She had menstruated up to Christmas last. Since that date there had been a little hemorrhagic discharge at intervals. For the last month there has been a continual discharge of coloured fluid. Her health is much impaired, and her strength lowered. On the 18th, while in bed, she felt a vaginal discharge, and on getting up passed a large quantity of blood. The pulse was weak, thready, 108; face blanched; headache intense. No pain preceded the hemorrhage. There was a tumour in the seat of the pregnant womb, extending more to the right side, and reaching to the umbilicus; it was firm and elastic, tender on pressure, which did not bring on labour-pains. The os uteri was the size of a shilling, and rigid. No placental murmur or sounds of fœtal heart heard. The breasts were quite flaccid. Os slightly expanded towards the afternoon. A dead fœtus, or some diseased condition of the ovum was suspected. In consultation, Dr. Barnes suggested galvanism to cause contraction; this had the desired effect, and Mr. Forbes was enabled to bring down a bunch of hydatids. The vagina was then plugged, and the abdomen bandaged. The disposition to contraction thus given, more hydatids were afterwards passed. Tincture of ergot of rye was then given in small doses. Early on the morning of the 19th, the patient passed a large mass of hydatids, which was expelled suddenly with a pain like that of labour. She was quite exhausted with loss of blood and previous disease; symptoms of inflammation appeared, and she sank the same night. The post-mortem examination revealed a large fibrous tumour in the walls of the uterus, and an advanced stage of granular degeneration of the kidney.

In such a condition of the uterus and the patient, none of the ordinary means of exciting contraction could have been employed with equal safety and advantage. The necessity of inducing contraction to expel the contents of the womb and arrest the hemorrhage was obvious, and the utility of galvanism in accomplishing this was manifest. I am disposed to regret that the galvanism was not more freely used. The expulsion of the hydatid placenta might have been hastened.

It is beyond the strict scope of this paper, but I may be permitted to refer to the advantages attending the use of galvanism in amenorrhœa, hysteria, and other diseases of females, advantages which have been clearly established by Dr. Golding Bird, Dr. Gull, and others. The stimulating influence of galvanism is well worthy of trial for the purpose of exciting the lacteal secretion.

*Mode of Applying Galvanism.*—I have now gone through a series of illustrations affording evidence of the use and value of galvanism in most of the forms of labour characterized by defective uterine action, and in other cases where the indication is to excite the contractile property of the uterus. I will conclude this paper with a brief description of the mode in which this powerful agent should be applied, and a summary of the advantages it especially possesses in obstetric practice over the ergot of rye. The ordinary electro-magnetic apparatus in use for medical purposes is, I believe, the best form that can be employed. The principle of this apparatus consists in the induction of magnetic currents by a current of electricity, and the production of a rapid succession of feeble shocks by continual interruptions to the current. I have observed that the uterine contractions are always provoked at the break and renewal of the circuit. Repeated shocks act as a far more effectual and certain stimulus to uterine contractility than a continued current. It is probably through inattention to this fact that some practitioners have failed in effecting contraction of the uterus by means of galvanism. As to the mode of applying the poles, I do not think it necessary to apply one over the spine, and the other to the neck of the uterus, as is usually done. I have found the application of the discs, covered with thin flannel moistened in water, one on either side of the abdomen over the uterus, much more convenient, and quite as effectual. The practice of applying one pole over the spine and the other to the neck of the uterus, further seems to me to be based upon an erroneous view of the mode in which galvanism acts upon muscular fibre. When the poles are thus applied, one to the spine and the other to the cervix uteri, it is doubtful whether the ensuing contraction of the uterus is due to primary excitation of the spinal marrow. It is proved by the experiments of Matteucci, and it is confirmed by general observation, that *galvanism acts directly upon the muscular fibre*, stimulating it to contraction. It is clear that this direct action can be as effectually obtained by passing the shocks through the uterus, by placing the poles on either

side of the abdomen. I would not be understood to affirm that this immediate action of galvanism upon the muscular fibre is its sole mode of action, but that it is the primary and essential one: this primary peristaltic action commenced, the secondary and tertiary diastaltic, emotional, and voluntary reactions upon the uterus follow* The duration of the application must depend upon the requirements of the case. It is often found that nothing but a primary excitation is wanted, and that this being supplied, the uterus will go on contracting spontaneously. In those cases where it is required to originate uterine contraction, as in the induction of premature labour, several applications of an hour's duration will be necessary. The uterus cannot be roused to perfect action before the appointed time without repeated stimulation.

*The Special Advantages of Galvanism as an Agent for Producing Uterine Contraction.*—Among the advantages of galvanism more especially worthy of attention are—

1st. The simplicity of the operation.

2nd. The extensive range of cases in which it may be successfully employed, rendering the electro-magnetic apparatus a desirable addition to the armamentarium of the obstetric practitioner.

3rd. The perfectly manageable character of the agent. Its action may be broken off and renewed at pleasure. The moment we think the uterus is acting too powerfully under its use, we may instantly withdraw the existing agency, and leave the uterus to the ordinary

* It will be seen, from what has been said above that I cannot concur implicitly in the views or conclusions of Dr. Golding Bird expressed in the following quotation:—"In the magneto-electric coil in which currents are excited by repeatedly breaking contact by a vibrating bar, we have two currents moving in opposite directions, to each of which the patient is submitted. Now these currents are of unequal strength; and if the most energetic—that on breaking contact—be passed in the direction of the *vis nervosa*, it will produce painful contractions, which the moment it passes in the opposite direction, will become relaxed: for a direct current tends to produce contraction; an inverse current, paralysis. Hence, I should urge the accoucheur not to employ the apparatus in which both these currents are produced, but simply the single current machine. In using this, I would suggest the positive conductor to be placed over the lumbo-sacral region, and the other to be carried by gentle friction over the abdominal surface. In this way, powerful uterine contractions may be easily produced."

Are we, when we place the positive conductor over the spine, and the negative one over the abdominal surface, warranted in assuming that we are passing a current in the direction of the *vis nervosa*? Are we so much as warranted in assuming that we are acting upon the contractility of the uterus through the medium of nerves at all? Conclusions such as these should be based upon demonstration. Has the uterus been isolated from all surrounding textures, preserving only its connexions with the spinal and sympathetic nervous systems; and have the effects of passing a "single current" along the nerves in a centripetal and centrifugal direction been observed? No. But this has been observed:—that muscular fibre, both voluntary and involuntary, will contract under the galvanic stimulus when its relations with the nervous centres are severed altogether! The only legitimate conclusion from the known facts appears to be, that, whether the shocks of the single or double current machines be passed through the uterus in one direction or in the other, whether through the lumbo-sacral region and the abdomen or cervix uteri, or from side to side of the abdominal walls, the uterine muscular fibre is stimulated and will contract. The observations of Matteucci, upon which the reasonings of Dr. Golding Bird appear to be built, apply more especially to the effect of very feeble currents upon the motor and sensitive nerves of the spinal system and the voluntary muscles.

physiological stimuli, which seldom impel the organ to undue activity. It moreover admits of easy regulation; both the strength and duration of this agent are completely under our command. We have it in our power to imitate in a remarkable manner the natural pains both as to intensity and intermission. Ergot has neither measure nor certainty.

4th. Its peculiar appropriateness and efficacy in cases of extreme exhaustion of the system, where deglutition is difficult or impossible, or where the stomach rejects everything; where any other mechanical application to the uterus is dangerous or inconvenient, and especially where the introduction of the hand into the uterus would be likely to be attended by injury or even a fatal result. Indeed, it may be truly said that in cases of extreme exhaustion, galvanism is the last resource left to us. The galvanic stimulus can be applied when everything besides is out of the question. The uterine muscular fibre will respond to this stimulus when the nervous system is utterly prostrate, when the heart has ceased to beat, when the patient is moribund or even dead.

5th. Galvanism is less exhausting to the system than ergot or most other means of exciting contraction. It acts directly upon the uterine muscular fibre, and scarcely taxes at all the general powers of the system.

6th. It does not necessarily preclude or supersede the use of other remedies tending to fulfil the same indication.*—*Lancet, Nov.* 12, 1853, *p.* 456.

Dr. Mackenzie bore ample testimony to the correctness of Dr. Barnes' conclusions. He himself had been for some time engaged in testing the use of galvanism in cases of uterine disease as well as in obstetric practice. He believed that there were four classes of cases in which galvanism might be usefully employed—1st, for the induction of premature labour, as Dr. Barnes' cases proved; 2ndly, in the various forms of inertia uteri during labour; 3rdly, in placenta prævia: in this condition the blood which he believed escaped from the uterine arteries could in no way be so effectually restrained as by galvanism, which he believed would speedily develope the action of the uterus; 4thly, there was another series of cases, of various forms of passive hemorrhage and leucorrhœa. He related the case of a patient who had been delivered five weeks: for

* An apparatus which combines to the greatest extent, compactness, portability, and efficiency is an especial desideratum to the obstetric practitioner. I know of no instrument that possesses these advantages to the same extent as that of Mr. Hearder, of Plymouth. This instrument is well-made, it does not occupy one-half the space of those usually sold, and whilst the maximum power is considerably greater, it admits, by the most simple means, of *accurate and minute graduation*. This last quality, independently of its obvious utility in regulating the power according to the effect desired, is one which the scientific practitioner will appreciate as affording the means of comparing his own observations with those of others. Further improvements in this machine are being effected, which will carry compactness to the furthest extent, and render it in every way admirably suited to the obstetric practitioner.

the first eighteen days she had been free from hemorrhage; hemorrhage had then set in; she became blanched, and exhibited evident marks of excessive loss of blood; this degenerated into passive hemorrhage. There was no disease of the cervix uteri. He applied galvanism; the hemorrhage stopped, and on the next day it had not returned; the application was repeated. He was confident that in galvanism we possessed an agent worthy of further investigation.

[Dr. WINN considers ergot of rye to be the more powerful ecbolic agent, and much prefers its use to that of galvanism.]—*Lancet, Nov.* 5, 1853, *p.* 437.

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142.—*Galvanism as an Obstetric Agent.* By DR. THOMAS RADFORD, Manchester.—[Dr. Radford was first led to the use of galvanism in midwifery from observing its value in a case of atony of the bladder. He has used it]

1st. In cases of tedious labour arising from uterine inertia.

2nd. In cases of accidental hemorrhage, either before or after the rupture of the membranes, and especially when exhaustion from loss of blood exists.

3rd. In cases of "placenta prævia," in which the practice of detaching the placenta is adopted, and the vital powers are greatly depressed.

4th. In cases of internal flooding before or during labour.

5th. In cases of post-partum floodings.

6th. In cases of hour-glass or irregular contraction of the uterus.

7th. To originate, *de novo*, uterine action, or in cases in which it is desired to induce premature labour.

8th. In cases of abortion, when the indications show the necessity, or justify the expulsion of the ovum.

9th. In cases of asphyxia in infants.

Galvanism is especially advantageous as a general stimulant in all those cases in which the vital powers are extremely depressed from loss of blood. Its beneficial effects are to be observed in the change of the countenance, restoring an animated expression; in its influence on the heart and arteries; in changing the character of respiration; and its warming influence on the general surface. I have several times observed, in cases in which other powerful stimulants have failed to produce any beneficial effects, the most decided advantage accrue after its application.

I have never observed that the child, in utero, has been injured by its use, which gives it a great advantage over the administration of secale cornutum, which, in many cases, is destructive of it. "This drug is liable to great deterioration; its operation is not always certain, its failure depending sometimes, perhaps, on its inert qualities, but frequently on a constitutional idiosyncrasy which resists its powers.

There are organic states which forbid its use: when the os uteri is undilated or undilatable, the child being still alive, it ought not to be administered. If in such a case it induces powerful tonic contraction of the uterus, it destroys the child. We cannot control or confine its action, and therefore it is totally unsuitable to cases in which we only want a limited effect. Again, if exhaustion is an element in the case, it is wholly inapplicable, as we ought not to adopt any means which tend further to depress the vital powers. The powerful and sanitary influence of galvanism was most decidedly obtained in the preceding case," (referring to a case to which these remarks were appended), "and the great advantage of this agent is, that its effects may be carried to any degree, from first only exciting the uterus so to contract that its diameters are lessened, and that its tissue comes to be applied to the body of the child. These, however, may be at pleasure increased, so as to accomplish the expulsion of the child and placenta. The gradual changes produced upon the uterine tissue were admirably seen in the foregoing case, and also its great power developed by its continued application—to arrest the discharge, expel the child and the placenta, and leave the organ safe from the occurrence of post-partum flooding."—*Extracted from a case detailed in the proceedings of the local branch of the Provincial Medical and Surgical Association*, 1847.

In the above-named case I used the poles externally, and have before this, and ever since adopted this mode of application.—*Lancet, Nov.* 26, 1853, *p.* 500.

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## 143.—ON THE USE OF CHLOROFORM IN LABOUR.

[At a meeting of the Royal Medical and Chirurgical Society, Dr. Robert Lee gave an account of seventeen cases of parturition, in which chloroform was inhaled with pernicious effects.]

He thought that a contemplation of the subtle action of this poison on the nervous system would have induced caution in its application to practice, but, on the contrary, the greatest levity had characterized its employment. Very soon after the discovery of its physiological effects the author was astonished and confounded by the announcement of its application to midwifery; and it was not difficult for him to forsee that rashness in its application and use would lead to most deplorable results, and he regretted to find that in this he had not been mistaken. It was not wonderful that women doomed to bring forth their offspring in pain and sorrow should seek to escape from the troubles of our race by means of this treacherous gift of science; neither could we feel surprise that the instances of women who were saved from the grievous pains of child-bearing, without bad consequences, should have for a time reduced to silence those unwelcome monitors who pointed to the possible evils of this new agent; but it did seem strange to the author that, amidst so wide-spread an ex-

perience as now existed of the noxious and dangerous effects of chloroform, it should be necessary for him to assemble the proofs of the havoc it had made. The two most serious effects produced by chloroform on women in labour were, a languid and deficient contraction of the uterus, and a greater susceptibility to the risks that arise from inflammation and fever. With regard to the first, the direct testimony of his own senses convinced him that the action of chloroform did very manifestly slacken the uterine contractions, and in some cases had put a stop to them altogether. Of the second class of effects, the risks of the puerperal condition were much complicated; for to inflammation and fever must be added severe cerebral and nervous disorders. He had no doubt that the use of this noxious agent ought to be expelled from the practice of midwifery. In conclusion, the author observed that, though his opinions had been confirmed by conversation with the most discreet and experienced practitioners, yet he entertained grave doubts of the result of the present appeal to the good sense of the profession, when he considered the arts used to propagate a faith in this practice. It had become almost an extra-professional question. There was a systematic concealment of truth by physicians: appeals were made to the natural timidity of woman, and the most fallacious promises of perfect safety were boldly held out. Conceited or ignorant women of fashion made a pastime of this as of other quackeries, and the cause of science and humanity was placed in the hands of the most presumptuous and frivolous part of the community, while young and inexperienced mothers were decoyed to their destruction. If he had helped to rescue the medical profession from the dominion of a great and dangerous error, and had placed some restraint on an ignominious and disgraceful practice, the author would rest satisfied that this essay had not been written in vain.

Dr. Snow said that the expressions in the latter part of Dr. Lee's paper were to be regretted. He had great respect for Dr. Lee, and for the manner in which he carried out his views, but he could not agree with him as to the connexion between the chloroform and the unfavourable symptoms which had been met with in the cases just related. As regarded the two cases in which the uterine action was said to have been altogether stopped by the chloroform, he could only say that he had never seen such a result from its use, and he considered that it must be extremely rare, if it ever occurred, when the agent was properly administered. In the fifth case headache and various symptoms of hysteria, which appeared on the third day after delivery, were attributed to the chloroform, but it was contrary to all that had been observed of this agent, whether administered in surgical operations, or in medical or obstetric cases, that any kind of illness from its use could come on two or three days afterwards. The effects of chloroform subsided much more rapidly than those of the older and less volatile medicines. A patient was generally as free from the influence of this medicine in an hour as from an ordinary dose of opium in

twenty-four hours. He (Dr. Snow) had seen two cases where an hysterical young woman remained apparently unconscious for a day or two after taking chloroform, but this was not the direct effect of the agent; it was a symptom which was met with in such subjects from various causes. In the same patient (Case 5) Dr. Lee had recommended means for getting rid of the chloroform out of the system four months after it had been inhaled. Now, it was physically impossible that chloroform could remain in the system in the way supposed, and this lady was no doubt quite as free from chloroform at the time as Dr. Lee himself. In the tenth case some cerebral symptoms which came on eight days after delivery were attributed to the chloroform that had been inhaled; but, for the reasons he had stated, it was impossible that any symptoms coming on at such a distant period could be caused by that agent. There were three or four cases in the paper in which there was either puerperal mania or something that Dr. Lee thought approached to it. Now, we had no means of knowing whether or not this disease was more frequent in persons who inhaled chloroform than in others; but, if it should turn out to be so, it should be remembered that this agent was in most cases administered during labour at the particular desire of the patient, who had a more than usual dread of pain. These patients often had an unusual excitability of the nervous system, and might possibly be more liable to mania, under any circumstances, than others. In Case 13 the author had attributed puerperal peritonitis occurring three days after delivery to chloroform. Now, this disease depended on the inoculation of a morbid poison, or an infection, and was well known before the introduction of chloroform. Surgeons might just as reasonably attribute phlebitis, secondary deposits of pus, sloughing phagedena, and other diseases which occasionally followed operations to this agent, but they did not do so. In the last case, where the patient only inhaled chloroform for half an hour, an attack of difficulty of breathing, which came on a fortnight afterwards, was attributed to chloroform, although there could be no possible connexion between the circumstances. Dr. Lee had stated that there was no proof that the uterus contracted properly after the patient had inhaled chloroform; he said that this was a mere assertion: but there was the clearest physical proof that it contracted, in the fact of its expelling the placenta into the vagina, within a few minutes after the birth of the child, and in its remaining contracted in the form of a dense circumscribed tumour just above the pubes. He had often assisted the accoucheur by placing his hand in the abdomen immediately after the birth of the child, and had felt the uterus contracting. It was true that a full dose of chloroform would at any time suspend uterine action for a few minutes, or as long as it might be kept up, and this was of the utmost service in cases of arm presentation. He (Dr. Snow) had seen chloroform of the greatest benefit in several such cases. He would mention one of them. He had lately been requested by Mr. French, of Great Marl-

borough street, to give chloroform to a poor woman who had been attended by a midwife. There was a presentation of the shoulder, the liquor amnii had been evacuated many hours, and the child was so wedged down into the pelvis, that Mr. French thought it would be necessary to eviscerate it. He (Dr. Snow) had told him that it would probably not be necessary when the chloroform was exhibited; and in fact, when the patient was placed completely under the influence of this agent, Mr. French was able to turn the child as easily as if the membranes had not been ruptured. The chloroform was then left off, and in two or three minutes after the birth of the child the placenta was expelled into the vagina. In a little time they were able to leave the patient in a very satisfactory state. The child was dead before Mr. French was called to the case. Now, nothing could exceed the benefits of chloroform in this case; and if Dr. Lee had the great objection to narcotizing a patient which he expressed, he ought to be rejoiced at the introduction of chloroform, which would enable him to effect his purpose with so much smaller an amount of narcotism than when opium was used. If fifty or sixty minims of laudanum were given, the patient remained under its influence more or less for forty-eight hours, and whatever might happen, there was no removing its effects; whereas the effects of chloroform subsided in a very few minutes by merely discontinuing its exhibition. To produce an amount of narcotism equal to that caused by the quantity of laudanum he had mentioned would require the use of several ounces of chloroform. Dr. Lee had alluded to the deaths from chloroform in surgical operations, as forbidding its use in obstetric practice; but they had scarcely anything to do with the question; for, except in cases of arm presentation, it was not necessary to approach a degree of insensibility which would be dangerous if it were exceeded. It should be remembered that no death from chloroform had occurred in midwifery, and he only knew of one case where the patient was in danger, and that arose from gross mismanagement, for the husband was giving the chloroform, and looking another way. With regard to the use of chloroform in surgical operations, he believed more lives had been saved than lost by it. Nothing was no more common than syncope during operations before its use, and syncope was not without danger in certain subjects; during the use of chloroform, however, syncope was rare. Many cases had occurred before the use of anæsthetics, where patients died suddenly during operations, or even when an operation was about to commence. He could not ascertain the number of these, but he thought they were not fewer than the deaths from chloroform, of which about thirty-five were recorded to have occurred in all parts of the world. Moreover, it was his opinion, that when this agent should be more generally studied, and greater care taken therefore in its use, the danger from it would be so extremely small, that it would be impossible to estimate it.

Dr. Merriman related a case in which, in consequence of labour

progressing very slowly, he administered chloroform "deeply." The effect was such, that some hours after, on visiting the woman for the third or fourth time after the chloroform was given, he could find "no trace of a child." He was much alarmed, and sent for Dr. Chowne, who came immediately, turned the child, and delivered the woman. This patient had puerperal insanity afterwards, but recovered. The effects of this case upon his mind were such that he had scarcely ever used chloroform since. He did not see much advantage from its employment even in cases where the forceps or even craniotomy was resorted to.

Dr. Chowne said that he concurred in the main with Dr. Lee, and he then entered at some length into the progress of chloroform as an anæsthetic agent. He alluded to the exaggerated encomiums with which it had been introduced into practice, and to the terrible effects it had in some instances produced. Indeed, to judge from a late report in the 'The Lancet,' the exceptions urged against its use were so many, that it would seem that it should be excluded from practice. However this might be, there could, he thought, be no doubt that when given in large doses, chloroform did produce injurious effects. If used at all, it should be employed with extreme caution, but in his own opinion, it would be hereafter little resorted to. In Dr. Merriman's case the head had been first impacted, and then chloroform was given to relax the parts. It produced such an extent of relaxation, however, that the child receded completely, and on his first examination, he (Dr. Chowne) was afraid that the uterus had been ruptured. Secale cornutum had been given ineffectually before he saw the patient, with the view of bringing on contraction. On the whole, he considered that the value of chloroform had not been fairly tested; there had been too much prejudice respecting it, and it was most important that we should pursue our inquiries into its virtues impartially.

Mr. Fergusson remarked that as the objections which had been raised to the use of chloroform, referred to by Dr. Chowne, were most of them deduced from surgical cases, he felt desirous, as a surgeon, having used this agent pretty extensively, to offer some observations upon the question under discussion. He might at once observe that he had seen no analogous cases in surgery to the seventeen which had been detailed in the paper read that evening. He would ask Dr. Lee to point out why it should happen that for hours, days, weeks, or even months, after the exhibition of chloroform in parturition, bad effects should result, when no such evils were ever observed after operations in surgery, however long and painful, and even when the patient had been kept under the influence of chloroform for half an hour or more, and had inhaled as much of the agent as Dr. Lee's patients had done? He (Mr. Fergusson) in his experience had never seen any such symptoms as those detailed coming on days after the use of chloroform; he had not seen secondary abscess, irritation of temper, &c., that he could

attribute to chloroform. He doubted much indeed, if in Dr. Lee's cases the evils were to be fairly attributed to the chloroform. With respect to the great prostration of muscular power which ensued from chloroform, such as was instanced in Dr. Merriman's case, it was only under such prostration that the surgeon interfered. But before that prostration, and during the time the chloroform was being administered, very different effects were observed. For instance, in cases of lithotomy, the water was expelled before the staff was introduced, and after its introduction there was a discharge of fæces, showing that muscular influence was at work, probably the muscles of the abdomen. Again, in reference to Dr. Lee's cases, it must not be supposed that they were all the cases in which chloroform had been employed in midwifery; there were probably thousands of instances in which it had been used, and we knew not with certainty of the amount of its evil effects ; but, looking at the vast number of cases in which it had been employed, at all events the subject could not be regarded as a novel one. As a surgeon, then, he (Mr. Fergusson) did not see danger from chloroform, when used with care and caution; but, when used otherwise, evils undoubtedly might and did arise.

Dr. Lee, in reply, said that there was no resemblance between a surgical operation and the process of natural labour—between the expulsion of a living child from the uterus by the muscular contractions of the organ, depending upon the influence of the great nervous structures with which its walls are endowed, and the extraction of a decayed tooth from the jaw, a stone from the bladder, or the amputation of a limb. In natural labour, if the pains are strong and regular, women, in a vast majority of cases, are exposed to little danger, require no artificial assistance, and the function is only disturbed by interference. Mr. Fergusson had just stated that one of the principal benefits derived from chloroform in surgery is the great amount of muscular relaxation which it produces during operations. In midwifery, this great amount of muscular relaxation would produce the most mischievous results ; it would, in fact, induce partial or complete paralysis of the uterus, as in the case just related by Dr. Merriman, and in several of the cases detailed in the paper read that evening. A striking and fatal example of the same kind had occurred since the paper was presented to the Society. Only three drachms were used in the first stage of labour, but no proper contractions followed the expulsion of the fœtus, and the uterus remained uncontracted till the death of the patient some days after in convulsions. There were no symptoms of puerperal fever or local inflammation. "The uterus did not go down to the usual size, so much so as to give rise to the suspicion that there was another child, or some ovarian disease, but there was neither." Dr. Snow had related to the Society a case of arm presentation, where the uterus was so completely paralysed by the chloroform he exhibited, that Mr. French turned with great ease, the contractions before being so violent, that he had contemplated eviscerating the

fœtus. Yet Dr. Snow affected to doubt whether chloroform and narcotic poisons impair the action of the uterus, and had expressed an opinion that in the cases he (Dr. Lee) had related in the paper, the sudden cessation of the uterine contractions after its use could not be referred to it. It was impossible to reconcile such contradictions, but they admitted of a ready explanation. He lately perused a letter written by a fashionable lady soon after her confinement, to a physician, which contained the following passage:—"Chloroforme à la reine, just a few drops on a handkerchief from time to time for the last hour; I found it a most indescribable alleviation, and that though never insensible." This was a correct account, he believed, of the way in which chloroform was administered by Dr. Snow in natural labour, and it would account very satisfactorily for his assertion that the uterine contractions were little, if at all, impaired by it. Fifteen drops sprinkled upon a handkerchief, and the lady now and then permitted to sniff a little of the vapour from the corner in the last hour of labour. If he (Dr. Lee) might be allowed in plain language to characterize this proceeding, he would say that the whole was a mere pretence, and calculated only to deceive the weak, ignorant, and credulous. The anæsthesia from chloroform, of which Mr. Fergusson had spoken, and which was usually, as he understood, the result in midwifery, was quite another affair from the "chloroforme à la reine" of Dr. Snow. Last week he saw a surgical operation performed upon a young woman, to whom six drachms had been administered. Her pupils were widely dilated, the breathing stertorous; there was foaming at the mouth; the pulse was rapid and feeble, and there were convulsive twitchings of the muscles of the extremities. No man in his senses would venture to reduce a woman to such a frightful condition in natural labour. In surgery it might be considered justifiable, but in midwifery it was wholly unjustifiable. Dr. Gream had stated that two ounces of chloroform might be given with safety in cases of natural labour, and though he admitted that it decidedly had the effect of diminishing the strength and regularity of the uterine contractions, yet still its influence might be so managed as to prevent the progress of labour being interfered with. If Dr. Gream would stand up in the face of the Society and state how chloroform could be so managed, he (Dr. Lee) would immediately sit down. (Dr. Gream here expressed his dissent, but Dr. Lee affirmed that this statement had been published by Dr. Gream in his last pamphlet.) In forceps cases, (continued Dr. Lee), and in all the great operations of midwifery, chloroform could procure nothing but mischief, for in all these cases consciousness was the great safeguard of the patient. No forceps cases—and he had had as many as any person in that Society—were so unmanageable as those in which the consciousness was lost from puerperal convulsions, where the patient could not be held in the same position for any length of time. In uterine hemorrhage, and in all cases of protracted labour, from whatever cause, nothing but mischief could result from the use of that narcotic poison.

The exhibition of chloroform in labour he held to be contrary to the sound principles of physiology and morality. "In sorrow shalt thou bring forth children," was an established law of nature—an ordinance of the Almighty, as stated in the Bible, and it was in vain to attempt to abrogate that law. There could not be a doubt that it was a most unnatural practice to destroy the consciousness of women during labour, the pains and sorrows of which exerted a most powerful and salutary influence upon their religious and moral character, and upon all their future relations in life. But he might put aside all these physiological and moral considerations, and rest his objection to the use of chloroform in labour upon the danger of introducing a subtle narcotic poison into the system at such a time. When only one drachm was given, who could be certain that it should not instantaneously be followed by the death of the person to whom it was administered? Upon this point the whole question might be allowed to hinge.—*Lancet, Dec.* 24, 1853, *p.* 608.

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## 144.—PREMATURE LABOUR ARTIFICIALLY INDUCED BY ERGOT OF RYE IN THREE INSTANCES.

By Dr. Francis H. Ramsbotham.

[The first case was the sixth pregnancy of the patient. In her first labour, craniotomy had been resorted to. In the second the child was premature. In the third, delivery was effected with difficulty by the long forceps. The fourth, fifth, and sixth are recorded below.]

On Monday, Nov. 14, 1853, at three p.m., this lady, being between thirty-four and thirty-five weeks advanced, began to take the following preparation of ergot, for the purpose of inducing labour prematurely.

℞. Secalis cornuti recentis in pulverem redacti ʒiij.; aquæ ferventis ℥vj.; infunde per semihoram in vase leviter clauso, et cola.

℞. Infusi suprà prescripti, ℥vss.; acidi sulph. dil. ʒss.; syrupi ʒij.; tinct. cardam. c. ʒij. Misce, sumat partem quartam 4tis horis.

On the afternoon of the 15th, she had taken seven doses, without any apparent effect. The os uteri was thick, hard, and high; it would just admit the tip of the finger. As the medicine had been procured at a small shop in the neighbourhood, and as it had neither the taste nor appearance of infusion of ergot, I desired the prescription might be taken to a larger and better-known establishment, where there was greater chance of obtaining a fresh and efficient drug. On Wednesday, the 16th, at three p.m., she complained of an uneasy sensation in the back, which had teased her all night, but had not prevented sleep. The os uteri was dilated to the size of a shilling, much softer, though still thick. At the same time, on Thursday, the 17th, the os uteri had acquired a diameter the size of a half-crown piece, was considerably thinner, and quite soft. The pain in the back had much increased, and she had not slept since three a.m. The

membranes became tense while I was making an examination, and I could have ruptured them by my finger very easily. On Friday, the 18th, at 3·30 p.m., the disc of the os uteri was larger than a crown-piece, quite thin, and very soft; there was decided intermittent action, and the membranes were protruded downwards with each return of pain. She had not had any sleep since half-past one, and there was a frequent inclination to pass urine. I ruptured the membranes without difficulty. Uterine action was established regularly at six p.m., and at two a.m. the pains became forcing. I arrived at her house at four a.m., and found the uterus acting very powerfully, and almost incessantly. A great part of the head had passed below the brim, the base of the skull being still above. It was expelled through the upper straight slowly and with difficulty, and the child was born at half-past four, alive. The placenta was projected into the vagina in ten minutes. The child had the appearance of an eight months' fœtus. Though this was scarcely to have been expected; for the last time the catamenia appeared, they ceased on March 12th. This patient had continued to take the medicine as first prescribed, till the membranes were ruptured on Friday the 18th; and, besides the first seven doses, which seemed to have been prepared from an inert and useless drug, she took eighteen, or, in other words, the infusion from nine drachms of the grain. The next day she was as well as she could be so soon after labour; and she has continued to progress satisfactorily without a check. She is nursing her infant which is thriving well.

*Case* 2. On May 21st, 1851, the same lady began to take the ergot in the same form, for the same purpose, being about eight months advanced in pregnancy. She took a dose every four hours; every fresh dose after the first two or three produced intermittent uterine action, which went off before the time arrived for the next. At two p.m., on the 22nd, the os uteri was somewhat open and softening. At two p.m., on the 23rd, it was dilated to the size of a crown, the pains being regular and strong. I ruptured the membranes, and ordered the medicine to be discontinued. I was sent for at half-past six p.m. The uterus was then acting powerfully and expulsively; the os uteri being entirely dilated. The child was born at 7·15 alive, the head having passed with some difficulty. The placenta was expelled speedily. Her recovery was rapid and satisfactory. She took twelve doses.

*Case* 3. On September 3rd, 1849, I gave the same patient the ergot for the first time to induce premature labour. She took it in the form already mentioned. At two p.m. of the 4th the os uteri was thick and rigid, but admitted two fingers easily. At half-past three p.m. on the 5th it had acquired the diameter nearly of a crown-piece, and was soft. There was decided uterine action, though it was not powerful. I ruptured the membranes, and had scarcely left the house, when strong and regular labour-pains set in. At half-past four p.m. I was sent for, but not being in the way, a friend of mine went in my

stead. He found the head on the perineum, and the child was born living at 4·45, an hour and a quarter after the membranes were broken. Her convalescence was uninterrupted. All her three former children are strong, hearty, and ruddy, and the infant is, as I have said, also healthy. There can be no doubt that in these three cases the ergot originated uterine contractions; and in my lecture on this subject, published in the 'Medical Gazette' for June 28, 1834, I have cited at length six instances where labour followed the exhibition of this drug, no other means having been had recourse to. Since that date a number of cases have come under my notice, where the same results have been obtained by the same means. Below is subjoined a table of 55 cases in which the ergot was used by me with that object, and another of 36 where labour was induced by puncturing the membranes. It will be seen that when the ergot was used, in 5 cases the child was born a quarter of an hour after the membranes were ruptured; in 3, between a quarter and half an hour; in 4, between half an hour and one hour; in 4, between an hour and one and a-half; in 3 between an hour and a-half and two hours; in 6 between two and three hours; and in 3, between three and four hours; so that of the 55 cases, in 28 the children were born within four hours, and of these, 12 within one hour from the time of the membranes being ruptured.

The longest time that elapsed between the rupture of the membranes and the child's birth was 136 hours, and there were six cases in which the period exceeded 100 hours.

In the 36 cases where the medicine was not given, the shortest time between the puncture of the membranes and the birth was $10\frac{1}{2}$ hours, and the longest 163; in eight cases it exceeded 100 hours. But if, for the purpose of contrast, the eye is run over the columns headed "Hours after the membranes were punctured," the difference in the time that elapsed in the two series of cases between the breaking of the membranes and the child's expulsion will be immediately and clearly evident; the whole number of hours in the 36 cases where the medicine was not administered, summed up together, being 2642 hours 30 minutes, an average for each case of nearly 74 hours; while in the 55 where the medicine was given, the aggregate amounted only to 1462 hours, an average of somewhat more than 26 hours.

It is generally acknowledged, that the longer the interval that elapses between the evacuation of the liquor amnii and the child's expulsion, the less chance is there of a live birth, owing to the continued pressure that must be exercised on its body, or on the vessels of the funis, or on those of the placenta; therefore any means by which this interval can be lessened is likely to add to its chance of safety. Irritating the os uteri by passing the extremity of the finger around it internally, the introduction of a sponge tent within the circle of the uterine mouth, and allowing it to remain there, that it may forcibly distend the aperture as it swells from the imbibition of moisture, galvanism, and the injection of warm water into the uterus,

have all been had recourse to with the same intention,—that of exciting uterine action, and, at the same time, preserving the bag of membranes entire. It appears to me, that no means yet devised is of such easy application, and, moreover, is liable to so few objections as that which I am advocating; but to establish the latter point, we must first determine whether the medicine can always, or at least generally, be relied on for the object in view,—whether it can be given in sufficient quantity to insure that object without injury to the mother, and whether it is equally innocuous to the child.

[Then follows a very interesting table of 55 cases which illustrate the effects of this medicine, and corroborate the above opinions and practice of Dr. Ramsbotham. From these cases he thinks the following principles may be deduced.]

First. The medicine, though given in tolerably full doses, and continued for a considerable period, produced in no one instance any injury to the woman's health, or other bad effect upon her system. Many of the patients, indeed, took more than twenty doses, at the intervals of four or six hours; one took forty-eight, and another sixty. Vomiting was induced in a few instances, and, in many, the pulse became depressed under its influence, unless when excited by the exertion of labour. All the patients, except one, recovered as well as if they had gone through the most natural labour; and the death of that one was by no means attributable to the drug, for it did not appear to act in any way, either on the uterus or more generally. The os uteri in that case was perfectly close at the time the membranes were punctured; and, when dilatation took place, the shoulder was found at the pelvic brim; version was impracticable, and delivery was accomplished by decapitation. The operation was performed 136 hours after the evacuation of the liquor amnii, and the patient died in eight days from pelvic inflammation.

Secondly. In by far the greater number of cases uterine action was decidedly initiated by the drug. The analysis above set forth clearly proves this to have been the case.

Thirdly. It seems demonstrated by the table, that the ergot does exert, in some instances, a prejudicial influence over the fœtus in utero, provided it is given in sufficient quantity; and provided, also, the mother's system is susceptible to, and is brought under its specific action; for of the 55 children born after the administration of the medicine, though 33 were born alive, 5 died in convulsions speedily after birth. Now, in this country, the death of an infant in convulsions within a few hours of its birth is a very rare occurrence; and if we take into consideration the well-known fact, that in those countries and seasons when ergotisme has raged as an epidemic, convulsive seizures, as well as gangrene of the extremities, have been a very common—nay, almost constant—symptom, we cannot withhold our belief that the deaths of these children so soon after their expulsion

can be fairly laid to their having imbibed the poison of the ergot while in utero, and its continuing to produce its baneful effects upon their organisation, and to develope its especial influence even at a time when they were no longer subject to its immediate operation. And this idea is strengthened in my mind by the fact, that in many of the 22 cases of still-births the mothers declared to me that they were quite sensible of the moment when the fœtus within them ceased to exist, on account of the sudden suspension of strong convulsive movements on the part of their infant, to which they had for some time previously been subjected.

Fourthly. I can state as a universal principle—though, this, indeed, does not appear from the table—that whenever the medicine fails to produce uterine contractions, it is equally innocent in respect of any deleterious effect on the economy of the fœtus.

And lastly. When the ergot is used, presuming that it exerts and renders manifest its specific influence over the uterus, it would appear to be the best practice not to persist with the medicine until the time when the child is on the point of being born; but rather to give only eight or ten doses, and to desist from its use whenever the os uteri has acquired the diameter of half-a-crown or a crown piece; the membranes may then be ruptured, provided the uterine orifice is soft and thin, and the vagina lax, as is usually the case under these circumstances. This counsel is tendered, because, should the uterus continue to contract, the mouth being to a certain extent dilated and thinned, will soon give way to the pressure of the head, and the child will be expelled in a comparatively short time. By acting in this way, prolonged compression on the funis and placenta will be prevented, while, at the same time, the quantity of the medicine taken by the mother will not have been sufficient to occasion any injury to the child's health, in the generality of cases.

That uterine action does not always follow the exhibition of the ergot, when given to induce labour, I am quite prepared to admit; for, although usually successful, I have sometimes been disappointed in my expectations. This in Case 6 of the first table, about 60 doses were taken, and 31 hours elapsed from the time the membranes were punctured to the child's birth; in Case 7, 20 doses were taken, and 114 hours elapsed; in Case 22, 12 doses, and 55 hours; in Case 39, 12 doses, and 83 hours; in Case 40, 15 doses, and 108 hours; in Case 42, 12 doses, and 111 hours; in Case 43, 8 doses, and 103 hours. In all these cases, the os uteri was thick and rigid; in none was it dilated to a greater extent than the size of a shilling when the membranes were punctured; and in Case 39 it was quite close; so that, if the medicine produced in them any effect at all, it was to a very trifling extent.

This may be explained by the fact, that some women seem to be insusceptible to the peculiar action of the ergot, as some constitutions are insusceptible to the peculiar action of mercury; while others appear to be most easily brought under its power.

Another source of disappointment—and I myself think a very frequent one—is to be sought for in the grain itself. It soon loses its virtue by keeping, and when stale it becomes perfectly inert; nevertheless, I have found the infusion of the fresh grain more efficacious than any of the tinctures or other preparations kept ready for immediate use.

As might have been expected, in bringing on labour by the ergot, we have the same disadvantages to contend with, in regard to the preservation of the child, which embarrass us when the same object is sought by any other method. The woman may have miscalculated the period of her pregnancy; she may suppose herself further advanced than she really is; and the child, when born, may either be actually not *viable*, or so immature as to be reared with difficulty; or, again, she may have exceeded the date she imagined, and the fœtus may be too large to pass through the pelvis unmutilated. Thus, of the ninety-two children in the two tables above, (there being one case of twins,) five were delivered by craniotomy, the patients having been allowed to go beyond the time when the head would traverse the pelvis whole.

But the most frequent cause of disappointment will be met with in the position of the child. It is a well-established fact, that "cross births" are much more frequent, comparatively, in premature labours, whether spontaneous or artificial, than in full-timed pregnancies. For instance, in thirty-four instances given by Dr. Merriman, in which premature labour was induced, fifteen of the children presented preternaturally, and only one of these was saved; and of the ninety-two children in the foregoing tables, thirteen presented with the breech or lower extremities, and six transversely; making nineteen preternatural presentations. The increased danger which the child must incur when any other part of its body than the head offers itself, will be acknowledged by every one who has paid the least attention to this subject.—*Med. Times and Gazette, Jan.* 7 *and* 14, 1854, *pp.* 8, 33.

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145.—*Proposal for the Effectual Cure of Prolapsus of the Pelvic Viscera and Lacerated Perineum.* By John Hilton, Esq., F.R.S.—[There are scarcely any diseases of a more wretched character and so little under medical influence as prolapsus of the uterus, bladder, or rectum. The following ingenious surgical treatment by Mr. Hilton, deserves every consideration. The theory of the operation and the mode of operating are thus described by Mr. Hilton, in a letter to Dr. Lever. He says:]

I certainly think the cases of lacerated perineum are worth publishing, and I have great pleasure in sending to you a statement of the reasons which induced me to adopt the operation performed in each of the cases. As far as I know, such an operation had not been done before that period, 1848, with the purpose of relieving the distress and annoyance to which these patients were exposed; but in this

opinion regarding the originality of the operation I may be wrong, if so, your better information will set me right.

When you requested my assistance to determine what had best be done in a surgical direction, remembering that the levatores ani have one firm and fixed attachment to bone near the arch of the pubes, and another at the coccyx, and that the external sphincter ani might be regarded anatomically nearly in the same light in relation to its effects upon the injury to the perineum, and bearing in mind that all muscles contract towards their more fixed point, no matter how that fixity of position may have been acquired, it occurred to me, if I could by a simple and uncomplicated operation, disengage the coccygeal attachments of the levatores ani, I might allow them to retract the anal aperture and adjacent structures in a direction towards the pubes, as it were, to bury the perineal injury deeply in the pelvis, thus enabling the lower fibres of those muscles (which blend with the muscular parietes of the vagina, rectum, and perineum) to assume the office of a sphincter to the lacerated opening, by approximating the edges of it, and drawing it upwards towards the pubic arch. In reference to the external sphincter ani, I concluded that, by taking away or separating the coccygeal fixed point of that muscle, I should necessarily change the direction of its contractile power from the coccyx towards the vagina, and thence to the pubes; this I hoped would help to occlude the lacerated opening between the vagina and rectum. Whether I had reasoned rightly or not, the results were as satisfactory, and indeed more so, than I had anticipated. It seemed to myself, that two ulterior purposes might be held in view by such an operation; the first was to ascertain how much of complete relief could be afforded by an operation which promised to be altogether free from both the danger and the severity of the ordinary operation for such cases; and secondly, should no important immediate benefit be derived, it would certainly tend to the advantage of the patient, by putting the parts into a better state (by relaxing them, and so taking off tension) for the easy and perfect accomplishment of the usual but more formidable operation of paring the edges of the lacerated wound, and maintaining them in contact for a time by sutures.

The method of proceeding was as follows:—A narrow sharp-pointed knife was introduced through the skin on one side of the point or free extremity of the coccyx, about half or three-quarters of an inch from its end; it was then passed into the pelvis, between the concave surface of the coccyx and the rectum, special care being taken not to puncture the intestine; the cutting edge of the knife was now made to sweep over the sides and ends of the coccyx, so as to separate from it the coccygeal attachments of both the sphincter and levatores ani; the knife was then withdrawn through the same small opening by which it had been introduced; scarcely any blood escaped at the wound, but a compress of lint supported by adhesive plaster was applied over it to keep the parts quiet, and to intercept the flow of blood.

That the operation had accomplished its intention of detaching the muscles from the coccyx, was obvious enough, by examining with the finger upon the skin, the median line between the end of the coccyx and the posterior margin of the anus, the resistance which the muscles naturally give to pressure in that position had disappeared, and the anal aperture became restricted or drawn up into the pelvis.

During the time I had the opportunity of seeing the patients after the operations, I have no hesitation in saying they were much benefited by what had been done for them, so much so, that no further treatment was deemed necessary. How far the operation may have succeeded ultimately and persistently, I do not know.—*Guy's Hospital Reports.—Monthly Journal of Med. Science, Feb.* 1854, *p* 164.

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## 146.—ON THE LOCAL APPLICATION OF THE VAPOUR OF CHLOROFORM IN UTERINE AND OTHER DISEASES; AND DESCRIPTION OF AN INSTRUMENT USED FOR THE PURPOSE.

By Dr. S. L. Hardy, Examiner on Midwifery to the R.C.S., Ireland.

[There are circumstances which prevent us in some cases from administering or inhaling chloroform, and there are also cases where local applications of it, as commonly prepared, are useless—such as the ointment and liniment. To provide for these emergencies, Dr. Hardy has proposed, where we wish a local effect to be produced, to apply the vapour of chloroform, and for the effecting this purpose he has invented an ingenious instrument. It will at once be evident that to no class of diseases will the value of this manner of application be so great as in that of diseases of the womb.]

Many of the diseases of females are not only exceedingly painful in their nature, but are rendered very difficult to treat, owing to a highly sensitive state of the nervous system. Pain may be most severe, but, to give relief, the evil effects of opium prevent its more frequent use: therefore other remedies less likely to cause those unpleasant consequences are prescribed. Instance, for example, cases of carcinoma of the uterus, in which, when pain becomes severe, opium must be resorted to. What is the state of the patient under its use? Ease is obtained, and perhaps rest in sleep, both most necessary and indispensable; but, on the other hand, extreme nervousness, headache, loss of appetite, constipation, and a host of ills, are ushered in or increased by it. Or, if it be a case of pain or irritation, as in dysmenorrhœal patients, here again opium is not resorted to if it can possibly be avoided, for many of the reasons already mentioned; but other remedies whose action, though milder, is less likely to disturb the nervous system, already too much excited, are mostly directed,—as camphor, extract of hyosciamus, hop, &c.,—yet whose soothing effects are frequently very slow in producing the desired ease and comfort for the sufferer. In such cases, if the local application of

the vapour of chloroform succeed in future trials, as it has already done, most immediate and very comfortable relief may be expected from its use.

The first effect produced by its application is a sensation of heat, which some complain of more than others, but which in a very few minutes is not referred to, as it is either more easily borne or soon subsides. If much uneasiness is expressed on account of it, the action of the instrument may be suspended for a little, or its effect diminished, which is all that is necessary. When applied per vaginam, on account of pain in the loins and sometimes over the pubis, arising from uterine irritation, immediately after the sensation of heat is felt from the presence of the vapour, the pain subsides, first in the back, then in the pubic region.

I have met with but one case in which chloroform, applied in this manner, did not remove pain; but in this instance the uneasy sensations were confined to the uterus, or felt per vaginam, and at the time the os uteri was very irritable on account of excoriation, which might account for a greater degree of heat than usual being experienced from the vapour.

The relief afforded by the local application of the vapour of chloroform is not of a very transient nature. In every instance in which pain was removed by it there was no return for several hours, and then in a very mitigated degree. In the intervals, great comfort was usually felt. Patients who previously had taken opium, as in Case 1., preferred chloroform, as it caused no unpleasant sensation in the head next day.

The apparatus for applying it consists of a small metallic chamber; to one end of this a gum-elastic bottle is attached, to the other, a pipe furnished with a valve. On the end of the chamber there is also a second valve to admit atmospheric air for the working of the instrument. In order to charge it with chloroform it is necessary to unscrew the stopper in the side of the chamber, within which a piece of sponge is placed for holding the fluid.

The quantity poured in should not be more than the sponge will absorb, otherwise, instead of vapour, fluid chloroform will be thrown against the affected part. When charged, the vapour may be conveyed to the part requiring its application by any convenient pipe, if closely fitted to the one on the instrument, pressure being made on the elastic bag to produce expulsion of the vapour.

In proceeding to the consideration of some of the cases in which the vapour of chloroform was used by me locally, the first disease presented to the reader is so well known as an exceedingly painful and distressing affection, that it requires no comment. Valuable indeed would that remedy be which in such a complaint could hold out the hope of affording relief during the often long and torturing existence of many who are the victims of this sad malady. Allusion having been already made to the use of opium in the treatment of it, sufficient

has been said to prove, that if, even for part of the duration of this complaint, it could be dispensed with by substituting the vapour of chloroform, this remedy is well deserving of a trial. In the present case it has been found most useful. Pain has been removed by it in fully as short a time as it could have been by inhalation, without the smallest uneasiness to the patient, who, as is stated in the case, was so perfectly relieved that she fell into a quiet sleep, and had an excellent night's rest, and this not on one occasion only.

*Case* 1. Mrs. L., aged 45, a very large, strong-looking woman, weighing about eighteen stone, the mother of seven children, the youngest five years old, had frequent attacks of uterine hemorrhage at irregular periods, which she supposed to be menorrhagic, as her regular menstruation, she said, had not ceased when those irregular hemorrhagic discharges began. Little notice was at first taken of them, but as they resisted the means adopted by her medical attendants, it was deemed necessary to have the uterus examined, for which purpose I was called to see her on the 19th of February, 1853.

I learned that, besides hemorrhage, she had in the intervals, a most offensive muco-purulent discharge; there was a sensation of burning experienced in the loins, the bladder was more or less irritable, and the bowels were generally confined, the alvine dejections being of an exceedingly dark colour, and looking as if streaked with blood: altogether she felt nervous to the greatest degree, and had become remarkably pale and weak from hemorrhage, which was not only frequent in its returns but very profuse.

On examination with the finger, the uterus felt extensively affected by carcinoma; ulceration had destroyed the cervix to a great extent; the edges of the ulcerated parts were most exquisitely tender to the touch, sharp and severe pain being complained of from the gentlest pressure with the finger.

Under the use of astringent and soothing lotions, cupping over the loins and sacrum, with tonics, &c., given internally, the hemorrhage ceased, and only returned at long intervals, and mostly owing to some accidental circumstance, such as a drive on a rough car, violent mental emotions, to which her exceedingly nervous temperament made her peculiarly liable, or awkwardness on the part of her nurse in using the syringe when injecting lotions. The sensation of heat in the loins was also relieved in the course of a few days, and only troubled her occasionally; constipation of the bowels invariably increased her sufferings, and if unrelieved by aperient medicine frequently caused a recurrence of the hemorrhage. At this time she did not suffer much, nor had she the characteristic pains of carcinoma until the month of May. In order to obviate the necessity for giving opiates, when pain became severe, various remedies were resorted to, such as tincture of Indian hemp, camphor and extract of hyosciamus, chloroform in draughts, cupping over the loins and sacrum, tepid hip-bath, &c. A drachm of chloroform and a scruple of camphor, mixed

with an ounce of white wax ointment, to which was added occasionally a drachm of extract of belladonna, when rubbed over the loins, either after or without the use of the hip-bath, gave very great relief, and was exceedingly grateful to her.

Gentle exercise, by driving in the open air, improved her appetite very much, and tended towards obtaining comfortable sleep for her at night. At length the pains became so severe that morphia draughts were frequently required. I now resorted to the local application of the vapour of chloroform, and with the most satisfactory results.

When the vapour douche of chloroform was used for about two minutes the finger could be moved freely over the edge of the ulcerated uterus without causing the least degree of pain, which never was the case before. The patient said she had a feeling of warmth or heat during the action of the vapour, which was soon succeeded by a numb sensation.

The first time that pain required the chloroform to be applied the suffering was perfectly removed in a few minutes, and the relief was so great that, on withdrawing the instrument, she fell into a most refreshing sleep, and had an excellent night's rest. It is now always resorted to when the pain must be quieted, and is very much preferred by the patient for that purpose to the morphia draughts, as she says her head is free from uneasy sensations the next day, which is not the case when she takes morphia.

For the following cases, Nos. 2 and 3, chloroform vapour seems to be particularly well suited. Before making a trial I had expected good results from its application; but the rapidity of its action in giving relief in each, and the permanency of the ease afforded in Case 3, exceeded my hopes very much. It is deserving of notice that in Case 2 the duration of the menstrual period was much lengthened, from which circumstance it may be inferred that the application has not only the effect of saving the patient from her usual degree of suffering, but, by subduing the spasmodic action of the uterus, tends towards the production of a more natural secretion. As yet I have not had an opportunity of testing its efficacy thus in the patient of Case 3; it is her intention, however, to resort to its use when next about to menstruate, so that at a future time the results may be laid before the reader.

*Case* 2. Miss R., aged 25, was for some months under treatment for disease of the uterus before coming under my care.

When I first saw her on the 13th Sept. 1853, she informed me that the ulceration which had affected her womb was for some time healed (which statement was verified by examination), and that she now suffered from very intense pain in that organ, which seized her every morning on awakening, and continued more or less during the day, accompanied by painful sensations in the lower part of the back. Menstruation was regular in its return, but its approach was attended with very severe pain, the secretion was very scanty, and continued but for

one day only. Her appetite was not good, and she was exceedingly nervous and weak.

Part of the treatment I adopted with this lady was the application of the vapour of chloroform to the uterus, which she was able to do herself. A very few days had passed when she told me the vapour always relieved her, and she felt improved under its use, and when applied at night going to bed she had the pain much less severe next morning.

On the 19th she had the sensations usually experienced on the approach of menstruation, which on former occasions were, as already noticed, exceedingly painful, but at this time she resorted to the chloroform vapour, which had the effect of rendering her perfectly comfortable, and the secretion, which usually lasted for but one day, now continued for three.

*Case* 3. Mrs. F., aged 25, a strong-looking woman, first came under my care on the 23rd of April, 1853. Shortly after marriage, which took place three years before this date, she aborted; since then she did not again become pregnant. Menstruation, both before marriage and to this time, was always very painful; the discharge scanty, and dysmenorrhœal membrane frequently expelled.

For the last two and a half years her health and strength very much declined, and she suffered from severe pain in the back and uterine region, attended with leucorrhœal discharge. On examination by the speculum excoriation of the os and cervix uteri was discovered, which soon got well under the treatment adopted.

On the 15th of September she again consulted me on account of a return of the severe lumbar and uterine pain which had troubled her for some time past, but on the day previous to her coming to me was so excruciating, and accompanied by so much pain in her breasts, that she thought it impossible she could have borne it. This day the pain in her breasts was better, but in other respects she suffered nearly as much as on yesterday, from pain in the pubic and uterine regions, and back. The uterus was tender to the touch when examined by the finger internally, but no abrasion of the os or cervix was discovered by the speculum. The vapour of chloroform, locally applied by the anæsthetic douche, had the most immediate and happy effects. In no case that I have met with did relief so instantly succeed to its use. Not more than a minute could have passed from commencing its application when the patient expressed herself relieved from, first, the lumbar pain, and next, that in the pubic and uterine regions. After I had withdrawn the instrument, for some time a sensation of warmth, of a very agreeable nature, combined with that of strength, was described as being felt in the back. Altogether, she said, for months she had not been so free from pain or so comfortable. Judging from the expression of countenance, the change so immediate from suffering to freedom from pain was most remarkable. There was no return of it until about eight o'clock in the evening, from the time of the applica-

tion of chloroform during the day, which was between twelve and one o'clock; but it was then so trivial that she did not think anything of it. The next day two or three jets of the douche quite removed every trace of uneasiness. The patient said she was not only relieved of the pain in her back, but she was perfectly free from the bearing-down sensation which had troubled her very much for some time past.

The drain of suckling on a weak constitution tends to the production of many debilitating and nervous complaints, which are met with very frequently in the form of headache, giddiness, pain in various situations, &c. The following case affords an instance of this description. The subject of it was very unfit to act in the capacity of wet-nurse, and was rendered still more unfit by the occurrence of uterine hemorrhage. Increased debility, as a natural consequence, followed the loss of blood; then came on violent lumbar and epigastric pains.

The remedies usually resorted to in such cases, and which are very beneficial, consist in tonics and anti-spasmodics, to which must be added a full and generous regimen, with exercise in the open air; but in the present instance it was very desirable to relieve suffering immediately, which was of a very severe nature, and in itself, independent of the previous drain, exceedingly debilitating to the patient's constitution. The vapour of chloroform served to effect this in a most satisfactory manner, and within the space of a much shorter time than could have been accomplished by any other remedy with which I am acquainted, while it in no way prevented the adoption afterwards of those means which were fitted to restore strength and vigour.

*Case* 4. Mrs. K., aged 32, a delicate-looking person, the mother of six children, at present nursing her youngest, a child of seven months old, was seized in August last with violent uterine hemorrhage, since which occurrence her back troubled her very much, and for three days previous to my seeing her was accompanied by severe pain, referred to the epigastric region. Owing to the violence of her sufferings, she came to consult me about three weeks after the attack of uterine hemorrhage. She seemed in great pain, and was bent forward from that in the epigastrium, which she described as running across from right to left. Immediate relief was anxiously sought for: I therefore proceeded to apply the vapour of chloroform to the uterus, *per vaginam*, by the anæsthetic douche, in hopes of giving her ease sooner in this way than by any other means. I had scarcely sent half a dozen jets against the os uteri when the pain subsided, first in the back, and immediately after in the epigastrium. The sensation perceived by her she described as being a most agreeable and comfortable feeling of heat in the spine, and a total relief from every trace of pain, which ease she had been a stranger to for the last three weeks. On rising from the sofa to sit in the upright position she felt a little weak, but only for a few minutes. During the application of the vapour she had no unpleasant or unusual sensation in her head, and the pulse seemed unaffected.

When abortion frequently takes place in any female, but more particularly in one of a much injured constitution, having in it the dregs of syphilis, diseases hard to manage, and attended with a good deal of distress, are occasionally presented to the medical man. The case next detailed is very much of this description. Various remedies were resorted to, but none of them served to secure perfect relief to the patient, whose situation in life rendered her peculiarly liable to relapse. She was the wife of a soldier, and consequently passed from the care of one medical practitioner to that of another, to which circumstance she referred much of her delicacy.

It will be seen in the notes of the case that chloroform was used in the form of ointment with more relief than was obtained from any of the other remedies, but at length failed in procuring ease; however, by resorting to the vapour, the benefit derived was very decided, and far more effectual than had been before experienced from any previous plan of treatment. The patient herself felt so entirely free from her usual sensation that her countenance now bore the expression of comfort and satisfaction.

*Case* 5. Mrs. R., aged 33, a very weak, sickly-looking woman, came under my care on the 4th of April, 1853, on account of uterine hemorrhage, which had followed a miscarriage she had three weeks previously. She had brought forth three children, all premature, and had several abortions. From her general appearance, and the history of her case, I found that a syphilitic taint was in the constitution; and the want of proper advice and care at all times, but particularly in her abortions, had added much towards increasing her delicacy. After the hemorrhagic discharge was altogether restrained, it was discovered that ulceration of the os uteri existed, which got quite well under treatment. During the time that it was present, and for some time after its being healed, she suffered very much from pain in the back and loins, with a most distressing sensation of scalding in the vagina, which required numerous remedies for its relief. One of the most effectual was the ointment mentioned in Case 1. Rubbing a little of this across the loins and over the sacrum was very soothing and agreeable.

On the 12th September she had a return of pain in the back and vagina such as I have described, but without a recurrence of ulceration of the os uteri. She resorted to the use of the ointment to her loins in the usual way, but without obtaining relief.

On the 15th she was forced to come to me, having suffered so much during the previous night, and was evidently in very great distress. I now applied the chloroform vapour, by means of the anæsthetic douche, to the uterus and vagina. In about four or five minutes she experienced relief, first in the back, and presently after in the vagina. I continued its use for several minutes in order to render the effect more permanent, which so fully succeeded, that she walked away feeling quite comfortable and free from pain. When I next saw her, a

few days after the application, she said relief was still felt by her, and that she had more ease than for a very long time previously.

The nipples are not uncommonly the seat of a good deal of irritation, quite independent of the existence of abrasions or fissures, which could account for this circumstance. I met with a most troublesome case of the kind some time ago in a first confinement, where pain was so great on applying the child that the lady, a very excitable person, could not bear the least effort of suction, though the cuticle, by the application of lotions during the latter months of pregnancy, was in a most healthy condition, without the least appearance of abrasion or fissure on the nipples, which were well formed, and projected sufficiently from the breasts. By smearing some extract of belladonna over the breasts, at some distance from the nipples, about an hour before nursing, all irritability was removed during the process of suction. To prevent risk to the child the belladonna was carefully washed off before placing it at the breast. This treatment was pursued for but two or three days, when the annoyance was perfectly relieved.

The results obtained in the following case from the local employment of the vapour of chloroform to the breast would lead me to prefer its use in a similar instance of irritable nipples to that related. It is less troublesome in its application than the extract of belladonna, and infinitely safer for the child. It is worth remarking how long the effect produced by it continued, several hours having elapsed before pain again became troublesome.

*Case* 6. A. Coffey, aged 30, the mother of five children, applied to me on the 16th of September, 1853, under the following circumstances. A week before coming, her child, an infant of thirteen months old, was sucking, and bit the nipple of her left breast, which hurt her very much. She persisted in nursing after the injury until the sixteenth of September, when the pain was so great that she was forced to desist. The entire breast was exquisitely tender to the touch, particularly on its under surface and towards the axilla, where it felt very hard and much enlarged; the skin moved freely over the tumefied gland, and was free from any inflammatory blush. The nipple was also very tender, and had a small scar on it, such as a child's tooth would make.

The patient informed me that for the last few days she had frequently a sensation of faintness, and altogether was very weak and languid.

In order to prevent the too rapid passing away of the vapour, I covered her breast with a capsule of paper, and under it directed the pipe of the douche towards the nipple, upon which I caused the chloroform to act during the first part of the operation. In about a minute or so, she could permit me to press it between my finger and thumb without the least sensation of pain. I then caused the vapour to pass on the tumefied part, under the paper capsule, which became influenced in a similar manner as the nipple, and could bear to be

raised and examined with very little uneasiness. The woman now passed her own hand over and under her breast, and expressed herself very much relieved, and much more comfortable than she had felt for some days. When I next saw her she told me her breast had felt very easy during the remainder of the day on which the chloroform was applied to it.

The next case is inserted though rather out of place, but as cholera seems again about to visit us it may not be altogether void of interest, as showing the beneficial results likely to be obtained from the use of chloroform in that disease. I have used this medicine very freely in many of the cases of vomiting and diarrhœa which have fallen under my notice during the present season, and from what I have observed of its efficacy, in staying the irritability of stomach and restoring warmth to the patient, I feel much prepossessed in its favour.

*Case* 7. Mr. B., aged fifty-nine years, was attacked with cholera during the night of the 27th of August, 1853. He had no sleep, vomited everthing taken into the stomach, passed large and frequent rice-coloured watery stools, and suffered severely from cramps in the abdomen, loins, and extremities, which caused him to cry out repeatedly.

I saw him at an early hour on the 28th. He was then very low and weak, countenance anxious, dark and much sunken, pulse very small, but not much increased in frequency, surface of the body and extremities cold. The purging had ceased for a few hours, but he continued to reject everything from the stomach. I directed a mixture, which he immediately vomited, though given with the intention of quieting this distress. He had taken camphor dissolved in spirits, which was of great comfort to him, but did not stop the vomiting. I now gave him a draught containing fifteen drops of chloroform in a little cold water, which he drank with great eagerness, and described it as the most reviving thing he had taken. Very soon after he fell into a quiet and refreshing sleep for two hours. On awaking he felt much better; the stomach was quiet, and he expressed himself as being warm and more comfortable.

I directed a draught containing ten drops of chloroform in a little water to be given every two hours whilst the vomiting continued. However, the relief and comfort caused by the first was so great that he desired a second, and was given it, though he had no return of vomiting. The stomach remained perfectly quiet, and he was doing well until his friends unfortunately, at his own request, gave him a glass of ginger-beer, which renewed the vomiting and purging. I now gave him acetate of lead and opium, ice, cold water, &c.; and to relieve the cramps I had the loins, abdomen, and extremities rubbed with chloroform, in the proportion of a drachm to an ounce of white wax ointment. This acted remarkably well, and not only produced the desired effect in quieting the cramps, but tended a good deal towards allaying the vomiting. In the course of a few days he was convalescent.

In observing the effects of chloroform as applied locally in the form of vapour in the above cases, I have endeavoured to obtain as correct a notion of it as possible, in order that a true estimate might be arrived at of its value as a remedy. Besides the cases here recorded, I have applied the vapour locally in various other forms of irritation. One of these in particular I was anxious to know its action in—namely, *pruritus pudendi*, a disease exceedingly troublesome and unpleasant to the patient, and for the relief of which she is often very reluctant to ask a remedy until forced to do so. I have used it in a case of this kind in the person of a very intelligent patient, who for a length of time had been annoyed, particularly on the approach of a menstrual period, by this distressing complaint, for which she had made use of various remedies. The vapour of chloroform, she informed me, afforded her relief from her uneasy sensations. On referring to one of the cases (Case 5) detailed, it will be seen that there was a very severe sense of scalding in the vagina, which seemed to depend a good deal on uterine irritation. Knowing the heat caused by the vapour of chloroform, I feared this patient would have suffered severely from its application; but, on the contrary, she was quite relieved of it; so in *pruritus pudendi*, arising from a similar cause, the like results have been obtained as in her case.

If future investigation as to the effect of the vapour of chloroform when locally applied coincide with the results already observed in the series of cases herein detailed, it seems reasonable that the following conclusions be considered deducible:—

First. That in many forms of disease attended with pain or irritation the local application of the vapour of chloroform will frequently act as quickly in affording immunity from suffering as though inhaled in the usual manner.

Secondly. That the vapour locally applied is not attended with any unpleasant effects (save the sensation of more or less heat) either at the time or subsequently, and is therefore eligible under circumstances contra-indicating its use by inhalation.

Thirdly. That as a remedy, its local application is preferable to the use of opium and most narcotics in spasmodic and painful affections, particularly of the uterine system, owing, first, to its freedom from causing derangement of the digestive organs, and secondly, to its greater rapidity of action.—*Dublin Quarterly Journal, Nov.* 1853, *p.* 306.

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147.—*Morphia and Chloroform in Puerperal Convulsions.*—[At a meeting of the Newcastle and Gateshead Pathological Society, Mr. Andrew Bolton read notes of the following case:]

Elizabeth ——, aged 22, unmarried, at the full period of a first pregnancy, healthy, but for some time in a desponding way, was seized, Jan. 9, at four a.m., with pain in head and loss of vision. At eight

a.m. I was summoned in time to witness a severe convulsive paroxysm, attended with stertor, lividity of countenance, and apparent impending suffocation. Twenty ounces of blood were drawn from the arms, and the cold douche unsparingly used to head and shoulders. In ten minutes she was calm again, the pulse reduced in tone 100. On examining the os uteri it was felt high, slightly dilated, and extremely rigid. The mere introduction of digits sufficed to bring on the convulsions, which recurred again and again, with intervals, of five or ten minutes, the whole muscular system participating in the spasms.

11 a.m. Paroxysms continue, and she is with much difficulty restrained. At the suggestion of my father, two drachms of sol. morph. Ph. L. were given, producing an hour's repose.

Half-past 12. Dose of morphia repeated, convulsions having returned with increased violence; countenance and general surface pale; the extremities cold. As her condition appeared hopeless, should the paroxysms continue, chloroform was administered on a piece of linen, in half-drachm doses, and its full effects kept up for three hours. At 2 p.m. there was a slight return of convulsion; skin warm and perspiring; the os uteri was found steadily dilating; and from her uneasy movements it was apparent that uterine action had begun.

Half-past 3. The membranes were ruptured; and brisk uterine action ensuing, a dead child was expelled, immediately followed by placenta. She regained her senses during the expulsive efforts, but appeared entirely ignorant of her previous condition. Recovery followed without any bad symptoms.

In conclusion, I would remark, that the convulsions were in no measure mitigated by the depletion, which was carried to the utmost; nor was there any yielding of the os uteri until the chloroform was inhaled.—*Med. Times and Gazette, Oct.* 15, 1853, *p.* 412.

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## 148.–PATHOLOGY & TREATMENT OF UTERINE CATARRH.

By Dr. E. J. Tilt.

[It may be stated with a great degree of confidence, that the general opinion of medical men with regard to the seat of leucorrhœal discharges, is, that they depend upon organic lesions of the os uteri and its vicinity. In these cases the treatment is effective and satisfactory. But in some cases the lesion may be in the mucous membrane lining the womb, and it is in these cases especially that there is the greatest uncertainty, both as regards the diagnosis and treatment.

*Uterine Catarrh.*—The following are cases of subacute or chronic inflammation of the lining membrane of the neck of the womb, and from the frequency of such cases, are well worthy of attention. The patient was a stout and florid lady, aged 26, married. The symptoms first arose from getting wet upon the feet. There was constant pain in the back, and in the left ovarian region.]

Menstruation retained its regular type, but was accompanied by a much more abundant flow, more pain, and by hysterical fits. This state of things had lasted two years when I was consulted. There was then considerable pain on making a digital examination, and I found the neck of the womb spotted with numerous exulcerations. These were cured by several applications of nitrate of silver and vaginal injections, with a solution of acetate of lead, but the back and ovarian pains remained unabated, so did the hysterical symptoms, There was no lesion to account for these symptoms, but as on pressing laterally all down the neck of the womb I gave considerable pain, and as the brown discharge continued, though the body of the womb was neither painful nor enlarged, I concluded that the lining membrane of the neck of the womb was subacutely inflamed, and, with the view of substituting a healthy inflammation instead of one of a low type, I painted the inside of the neck of the womb with the solid nitrate of silver. This was followed by much abdominal pain and protracted hysterical fits. A second application, made ten days afterwards, being followed by similar accidents, I resorted to the application of tincture of iodine inside and outside of the neck of the womb. This was done every four or five days for the first three months, and then only once a week, while at the same time the patient took thirty drops of Bullock's syrup of citrate of quinine and iron three times a day. Menstruation continued extremely profuse for the first three months of treatment, being often accompanied by hysterical fits; but the morbid symptoms gradually abated, and the patient has been for the last six months free from all suffering, uterine discharge, and hysterical symptoms.

[The second case was in a delicate patient, aged 26, with similar symptoms, but attended also by a profuse discharge of viscid fluid from the uterus. The cause was, her remaining several hours in damp clothes.]

No pain was felt when the body of the womb was pressed, but a considerable amount when lateral pressure was made to the neck of the womb. The uterine symptoms were alleviated by the application of the solid nitrate of silver to the internal surface of the neck of the womb, and instead of white the discharge became brown. This was checked by seven or eight applications of the tincture of iodine, and the patient experienced no further suffering. A few months back, however, I was again sent for, as there was a fresh attack of uterine pain and brown discharge, which was cured by topical applications of tincture of iodine, by the internal exhibition of steel, and by a sea voyage. In this case also the patient has never conceived. Menstruation remained regular, and there was no flooding.

[Dr. Tilt makes the following remarks upon the symptoms and treatment of this disease.]

*Symptoms.*—Pressure applied *laterally to the neck of the womb* gives more or less pain, which is not the case in the healthy state. A glutinous discharge is seen oozing out of a somewhat turgid os uteri, and long threads of it may be removed; but when uncomplicated by erosions, ulcerations, or vaginitis, we have not observed that the discharge was frequently abundant. Whether the mucous follicles lining the neck of the womb can be affected by some other lesion, so as to warrant Dr. Tyler Smith's position, that the mucous membrane of the neck of the womb is the most frequent origin of leucorrhœa, remains to be decided by further researches; this opinion having been also held by Boivin and Duges, it demands very careful consideration.

Sometimes the discharge is of a brown colour, as in the cases related; not mucus streaked with blood—not the sero-sanguinolent discharges of the body of the womb, but an intimate mixture of mucus and blood, as in the rusty sputa of pneumonia. This discharge we consider to be very characteristic of subacute inflammation of the mucous lining of the neck of the womb; and on a microscopical examination, it is found to contain globules of blood more or less deformed, and mixed with mucus and epithelial-scales. It is very annoying to women, from the manner in which it stains the linen. This discharge may last the whole intermenstrual period, or only during the ten days which follow the flow; and we have found iodine applications of great utility in such cases. Judging from my own practice, I believe that the *viscous* discharge is more frequently met with than the *brown*, which generally accompanies a very mild type of inflammation.

Chomel, in his Clinical Lectures, has drawn attention to cases in which there is a red stain on one of the lips of the os uteri; instead of being sunken, it is slightly raised of a vivid redness, velvety to the touch, not surrounded by pus, but by the well-known viscous fluid of the neck of the womb. This is no more an ulceration than the port wine stains or erectile spots on the skin, and may be considered an exaggerated development of the bloodvessels of the villi, which in the normal state are covered with cylindrical epithelium, and, when hypertrophied, form a piece of living crimson velvet, which in four instances I have seen lining part of the cavity of the neck, giving rise to the symptoms I have just described. Such lesions predispose to metrorrhagia, and their detection suggests the necessity of active local treatment, as in an exaggerated instance of this lesion which was related by Dr. Forget to the Society of Emulation at Paris. A woman had experienced repeated metrorrhagia; and on being examined, the neck of the womb was found lined with a soft, red, and bleeding substance, elastic, crepitating, and offering most of the characters of erectile tissue. This surface was repeatedly cauterized, and after a few months of treatment, was completely cured. We think that Dr. Kennedy, of Dublin, has described similar appearances under the name of *doughy* or *boggy* ulcers of the womb. In my four cases, the women had been several years married, and had been sterile. This is in harmony with Chomel's experience.

*Prognosis.*—Dr. Kennedy has stated that "although the inflammation of the internal surface of the neck of the womb may be borne without great inconvenience for years, still it leads to the serious implication of the sub-mucous tissues, which undergo a change which may be termed *uterine ramollissement*, attended by frequent hemorrhages, unhealthy, grumous, and muco-purulent discharges." Now, with due deference to high authority, we think that Dr. Kennedy has described exceptional cases. All mucous membranes may remain chronically inflamed for years, without entailing more serious lesions than were first visible, and in general the mucous membrane lining the neck of the womb may remain subacutely inflamed, without causing anything like *uterine ramollissement*, but it fosters hysterical phenomena, keeps up a vaginal discharge, and causes repeated relapses of erosions, or ulcerations of the neck of the womb. I believe Dr. Tyler Smith's views are correct, and that the inflammatory action of the glandular mass of the neck of the womb, determines the too abundant secretion of its alkaline products, and that, by their presence on the os uteri, accustomed to acid secretions, they cause the rapid shedding of the epithelium, with that destruction of the subjacent villi which warrants the name of erosion or exulceration. Whatever form it assumes, all observers agree that subacute inflammation of the mucous lining of the neck of the womb is a frequent cause of sterility.

*Treatment.*—Dr. Melier advised the injection of emollient fluids into the cavity of the neck of the womb, but they would be ineffectual to modify the inflammation of the mucous membrane, while their entrance into the cavity of the body of the healthy uterus might be attended by dangerous results. If emollient injections into the cavity of the neck of the womb are objectionable, how much more so must be injections of a solution of nitrate of silver, as used by some French practitioners for what they call *uterine catarrh?* Although the cavities of the healthy body and neck of the womb are separated by a stricture, sufficiently tight to prevent the easy passage of the uterine sound, nothing proves that this stricture could prevent the passage of fluid, and the numerous and fearful accidents which have attended the practice of uterine injections, permit the belief that the stimulating fluids sometimes cause fatal metro-peritonitis, by passing into the healthy fundus uteri, and, perhaps, into the peritoneum through the oviducts. Dr. Bennet states, in his work on Uterine Diseases, p. 269, "that nothing but strong cauterization with acid nitrate of mercury, or the potassa fusa cum calce to the lining membrane of the neck of the womb can overcome the tenacity of the disease." If this refers to exceptional cases, I commend the practice, but in cases similar to those related, I prefer the tincture of iodine, or the iodide of iron, because it enables us to effect a solid cure, without inducing much pain, or running the chance of the serious accidents which sometimes follow caustic applications. After clearing away the uterine mucus I apply the

tincture of iodine with a *sable* paint-brush, introducing it as far into the neck of the womb as can be done without using much force. On withdrawing the brush, I paint the vaginal portion of the neck of the womb. This is a mode of practice that I have now used for several years, and I can safely recommend it, as I find that something similar has been recommended by Dr. F. Churchill. A drachm of acetate of lead, in a pint of decoction of poppy-heads, forms the best injection in such cases.

With regard to the crimson elevations on the mucous lining of the neck of the womb, tincture of iodine is of little use. The solid nitrate of silver is the best application, or the acid nitrate of mercury; and it must be borne in mind that this condition is often more difficult to treat than simple ulceration.

With respect to constitutional measures, I shall merely say, that in all chronic uterine affections the practitioner will find a sheet-anchor in the various preparations of iron, and that the syrup of citrate of quinine and iron, or the syrup of iodide of iron, are very good preparations,—*Lancet, Dec.* 10, 1853, *p.* 545.

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## 149.—ON THE TREATMENT OF INTERNAL METRITIS.

By Dr. E. J. Tilt.

[The following is the treatment which Dr. Tilt recommends to be employed in the various morbid states of the mucous membrane lining the womb; but he observes that it is frequently beset with difficulties, and may be protracted for a long time.]

There are certain general indications of treatment available in all cases, whether the uterine mucous membrane does or does not present organic products on its surface. Thus it is necessary to ascertain by a careful examination, whether the hemorrhage does not depend upon some erectile development at the orifice of the neck of the womb, as in cases alluded to in the previous papers. The menorrhagia must be restrained by the means usually recommended, among which we may mention the horizontal position in a cool temperature; the application of cloths steeped in cold vinegar and water to the pubis and the inner part of the thighs; the injections of cold water or cold aluminated water, to the vagina and rectum, two or three times in the course of the day. Such measures, however, will seldom succeed unless they be associated with the internal exhibition of ergot of rye in doses of from five to ten grains three or four times a day, from which we think the most benefit is to be derived, though in some cases the practitioner will be obliged to ring the changes on mineral acids, acetate of lead, tannin, gallic acid, &c., according to the rules laid down in works on therapeutics, to which I refer the reader.

The patient's strength must be kept up by such an amount of food as can be digested; but it should be taken cold. Wine and stimu-

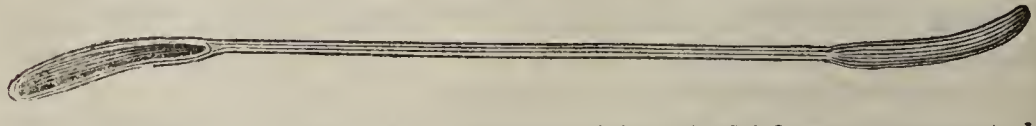
lants should be avoided, and all drinks should be as cold as possible. Water, or cream ices, flavoured according to the patient's taste, may be advantageously given between meals. Should the complaint determine continued insomnia and hysterical symptoms, acetate of morphine must be given, and the doses progressively increased until such symptoms abate. In the interesting case I related in a previous paper, the patient for many days took from two to three grains of acetate of morphine, and I believe that it not only brought on sleep and diminished hysterical phenomena, but was also instrumental in curing the uterine disease, for the manifest improvement only set in when the patient was brought under the influence of opium.

When the violence of the disease has abated, and instead of flooding, there remains amongst other symptoms, a moderate discharge of serum, sanguineous or not, then benefit will be derived from the application of a seton or issue above the pubis, either of which should of course be kept open for several months. This is a disagreeable remedy, and therefore seldom proposed, but it will be found beneficial not only in cases of internal metritis, but also when dysmenorrhœa is attended by uterine exfoliation; indeed we have found nothing so useful in this obstinate complaint.

If it has been ascertained by means of the uterine curette that the internal surface of the womb is free from all morbid products, all further instrumental interference would be objectionable, inasmuch as it could do no good, and must do harm. Should the curette, on the contrary, detect roughness, and bring away some of the morbid growths previously described, their removal from the womb is an indication of first-rate importance, since a rapid cure has sometimes followed the operation, and no improvement can take place so long as they remain.

As this method of treatment is almost unknown amongst us, and as it is also applicable to the cure of menorrhagia when caused by retained portions of placenta, or by hydatid growths in the early stage of their formation, I shall enter into some details. Recamier, in one case, finding the neck of the womb much dilated, introduced his finger into the cavity of the womb, and scraped of the vegetations with his nail. This suggested to him, some forty years ago, the idea of doing the same with an uterine sound made of pewter or steel, and he called it a *Curette*, because it was destined to remove morbid growths from the cavity of the womb. The curette is an uterine sound, blunt, somewhat curved at its extremity, and hollowed out on its curved side,

Fig. 1.



as it is shown in figure No 1, the extremities of which are represented as more pointed than they really are. It should be introduced into the

cavity of the womb like Dr. Simpson's uterine sound, and then gently pressed on the internal surface of the womb so as to detach any soft bodies which may be there. In some rare cases in which the internal orifice of the womb was widely dilated, Recamier used a larger instrument (fig. 2.) Whatever instrument was used, the speculum would

Fig. 2.

only render the operation more difficult. Recamier generally followed up this treatment by cauterizing the internal cavity of the neck of the womb with the solid nitrate of silver, by means of an instrument resembling Lallemand's *port-caustique*. Two cauterizations were in general sufficient, and in some of the cases published by Recamier, this treatment had for effect not only to stop the menorrhagia, but also to cause the womb to contract, and thereby to return to a right position from retroflexed, which it had been for years. These operations have been performed in the presence of Paul Dubois, Blandin, Guerin, and many others; and repeated by Maisonneuve, Robert, Gosselin, and myself. In the course of the last year, Nelaton and Nonat have published several cases of it in the 'Gazette des Hôpitaux.' The first effects of the operation are to increase considerably the habitual hypogastric pain, but this does not last long, and when it disappears, the habitual pains likewise disappear, as well as the fœtidity of the discharge, and those sero-sanguinolent discharges which have lasted for years sometimes completely cease in a few days.

Many will doubtless be afraid of this operation, but is nothing to be risked when menorrhagia is interminate, and when the patient's health is sinking from the effects of abundant sero-purulent discharge, for which the neck of the womb gives no explanation? In such cases, fortunately rare, is it not rational to enter the cavity of the womb with a blunt instrument, in order to interrogate its surface, and to remove those superficial abnormal productions which have been known to produce the symptoms I have detailed? The risk is not so great as might be supposed, for Recamier performed the operation on 100 patients, and only lost three by peritonitis. In two cases, peritonitis was caused by the passage of the curette through a previously softened portion of the womb, which was thus transfixed by the instrument. In the third case, Professor Nelaton, who made the post-mortem examination, was not convinced that death was caused by the operation; no trace of metritis was found, neither had the curette made a false passage. Pus was found in both the Fallopian tubes, but as the patient was opened twenty-four hours after the operation, it is difficult to suppose that it was produced by the operation. I have not heard of any other fatal termination to the numerous similar operations performed by other surgeons. A very large volume could be filled with

the fatal effects of false passages made in attempting to sound the bladder, and still surgeons continue to perform this operation. We have heard of several fatal results of false passages made with the uterine sound, and still most practitioners feel themselves justified in using an instrument of which Dr. Simpson has well indicated the utility. For the same reason, I feel justified in advocating the use of the uterine curette, notwithstanding accidents, which will impress upon you the necessity of using it with intelligent gentleness. You will, moreover, doubtless observe that the plan of treatment I have shown to be useful in some rare instances is not more dangerous than that proposed by others for similar cases. Velpeau advocates injections and cauterization of the internal cavity of the womb; and Dr. Bennet, in his notice of internal metritis, says "that he has carried the solid nitrate of silver into the cavity of the womb in internal metritis, or else the acid nitrate of mercury as a last resort, and sometimes without success."

I must not omit mentioning that you will find the curette, as represented in Fig. 1, very useful to remove portions of retained placenta from the womb, when its size and sensibility, as well as continued flooding subsequent to confinement, lead to such a diagnosis. Recamier first used it for this purpose, I and others have imitated his example. Vidal de Cassis, Hourmann, and other French practitioners, have tried injections of a solution of nitrate of silver in what they term uterine catarrh. Acute peritonitis occurred in some of their cases, several of which ended fatally; but I have already shown that French pathologists have confounded some half-dozen different diseases under the name of uterine catarrh.

To give an idea of the kind of cases in which the French have tried uterine injections, I shall relate what Bequerel did at La Pitié in 1850. He chose seven women, in all of whom the neck of the womb was more or less acutely inflamed; the orifice of the womb was larger than it ought to have been, and surrounded by erosions; the discharge was muco-purulent. An india-rubber sound was introduced into the womb to the depth of an inch and a half, and by means of a syringe, a solution of nitrate of silver of two grains to the ounce of water was injected. Three out of the seven patients were suddenly seized with symptoms of severe metro-peritonitis, from which it is true they recovered, but without even being cured of the original uterine disease, of which only one out of the seven was cured. These cases could not have been worse chosen, for while the neck of the womb was acutely inflamed, the body of the womb was most likely in a healthy state; and although the india-rubber sound did not penetrate into the cavity of the womb, the solution of nitrate of silver did, and coming in contact with a surface, the sensitiveness of which had not been blunted by long-continued morbid action, metro-peritonitis ensued.

The fatal results of uterine injections in such cases does not imply that they would not be useful in well-selected cases. Although such

is my opinion, I have never employed injections into the womb, for I have been deterred from their employment by the knowledge of the uncertainty of their action. Sometimes a strong solution of the nitrate of silver can be injected into the womb without much reaction; at others, a decoction of nut-leaves brings on acute peritonitis. This uncertainty of action is met with even in the same patients: thus, in one of Recamier's cases, the vegetations had been removed from the womb, its cavity had been twice cauterised without determining any reaction, when it was thought advisable to inject a little tepid water into the womb, but this was very soon followed by violent symptoms of peritonitis. In three of Becquerel's cases peritonitis ensued after a second, a third, and a fourth injection, the previous injections having produced no ill effects.

In case uterine injections should be deemed useful, a weak solution of tincture of iodine would be the best fluid to be used, and the best instrument, that which was suggested to Dr. Mackenzie by the sight of Mr. Coxeter's ingenious instrument for laryngeal injections. I should, however, caution those who might use it to press lightly on the fundus of the india-rubber receptacle, otherwise the fluid would be projected with too great force. In two instances I have removed the vegetations from the internal cavity by means of the curette, and nature did the rest.

In another case, after applying the speculum, and removing as much as possible of uterine mucus, I covered the extremity of the uterine sound with cotton wool, which, when saturated with tincture of iodine, I introduced into the cavity of the womb. The neck of the womb took up part of the tincture; so, removing the sound, I again saturated it, and re-introduced and pressed it about in various directions. This was not followed by much pain. Three days afterwards some of the vegetations came away, with a sero-purulent discharge. Ten days after, I repeated the operation with similar results, and then the case did well.

In the wards of Baudeloque, at the Hôpital des Enfants at Paris, I had been often struck by the good effects which followed the application of caustic iodine to the ulcerated surfaces of scrofulous patients, and I was led to try the same application, according to the strength indicated by the Pharmacopœia, or diluted with water, to various morbid lesions of the mucous membrane of the womb.

The benefits to be derived from the topical applications of iodine to the womb are little known to the profession, and are well deserving of more extensive trial than has hitherto been given to them, not only on account of the favourable results of their application in the cases under consideration, but also from the well-known fact of the innocuity of the introduction of iodine into our tissues. Within the last few years, in France, tincture of iodine has not only been injected into the tunica vaginalis, to cure hydrocele, but also into fistulous passages of acutely-inflamed extensive mammary abscesses, into large ovarian

and other cysts, and even into the peritoneal cavity to cure ascites, and without determining those symptoms of violent inflammation that might have been expected.

Having thus briefly sketched what is known relative to uterine catarrh and internal metritis, it may be well to state some of the points in which they differ, as the last complaint has but little occupied the profession of this country.

Uterine catarrh is very frequent; internal metritis very rare. Uterine catarrh almost exclusively affects the neck of the womb; internal metritis, its body. Uterine catarrh is as frequently observed in the single as in the married; internal metritis seems to affect almost exclusively those who have borne children. In uterine catarrh the discharge is viscous; in internal metritis, serous or sanguineous, and very abundant. Uterine catarrh gives rise to no abnormal growths; internal metritis frequently does. In uterine catarrh life is never compromised; it is not unfrequently so in internal metritis. Injections have been found useless and often dangerous in uterine catarrh, but are sometimes serviceable in internal metritis.—*Lancet, Jan.* 21, 1854, *p.* 63.

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## 150.—ON THE DIMINUTION AND DISAPPEARANCE OF UTERINE TUMOURS.

By Dr. Samuel Ashwell, late Obstetric Physician and Lecturer at Guy's Hospital.

[There is something very extraordinary in the spontaneous diminution of some uterine tumours, without any coincident breaking-down of their structure. A few striking cases of this kind are here recorded. The alarm on discovering the presence of large tumours of the uterus is by no means so great as it was some years ago.]

The exact pathology, however, of certain of these uterine tumours is still a vexed question—one certainly admitting of further elucidation—whether, for instance, a *fibrous* tumour is ever capable of being absorbed, is yet a matter of dispute; for while Lisfranc regards the absorption of any tumour as satisfactory proof that it is not fibrous, there are, as I shall show, distinguished pathologists, both in this country and abroad, who believe they have witnessed the melting down and disappearance of both fibrous and cancerous growths. It is therefore right, where we can only form a doubtful diagnosis as to the nature of any uterine tumour, to treat it as though it were curable; for if malignant, judicious treatment can do no harm; whereas, if it be of unspecific and benign character, the treatment will generally prove curative. I state then, at once, that the pathology of these large and hard tumours, to the very occasional diminution and disappearance of which, *without* coincident breaking-down and discharge of their structure, I am now soliciting attention, is not the object of

this paper, my aim being, to show that tumours of the uterus so large as to attract attention by their great size, so hard as to resemble, in some examples, the hardness of true carcinoma, and giving rise to alarming hemorrhages and frequently-recurring pain, do very occasionally, when all treatment has been abandoned, present the following results:—

First. A slow but progressive diminution of bulk and of hardness, unaccompanied by any appreciable breaking-down of their structure.

Second. A lessening at least, and sometimes a cessation of the bleedings, profuse menstruation and discharges, and, where it has existed, of the pain.

Third. A gathering of flesh, and a restoration of the general health.

As tending to confirm these statements, I shall adduce the opinion of some eminent pathologists, to prove that the absorption even of scirrhous tumours may be effected by appropriate treatment.

Sir Charles Clarke (vide 'Ashwell on Female Diseases,' p. 297) mentions a case "where a tumour as big as a child's head could be felt through the parietes of the abdomen; just above the pubes, upon its surface, could be felt two smaller tumours—one the size of a man's fist, and the other twice this size. The patient had laboured for some time under a very profuse discharge of blood from the vagina. A variety of means were employed for the relief of this case for two years. Upon examining the abdomen at the end of this period, the tumours could not be discovered, and after death the uterus was found as large as that of a woman at the end of the fifth month of pregnancy. Upon the anterior part of it, near the fundus, were found two tumours, *as large as peas*, which were probably the same tumours before felt, as there was no other vestige of them. The tumours were of a hard and resisting nature, and were lying between the muscular part of the uterus and the peritoneum covering it."

Dr. Walshe (in one of the most invaluable text-books of our profession, 'On the Nature and Treatment of Cancer,' p. 134) says, in reference to the termination of cancer, by *resolution* and *absorption*,—"one of the most essential attributes of cancerous substance is an unswerving tendency to grow, or at least to sustain itself unimpaired, by the influence of surrounding parts; its nature is opposed to resolution. Nevertheless, there would be temerity in denying the possible occurrence of this unfortunate change." Weller affirms, that he observed a medullary fungus of the eye of an infant, which eventually disappeared, aud was followed by dropsy and atrophy of the ball. Mr. Travers relates, that "the solution of chloride of lime effected the absorption of a large tumour (in the course of some months), regarded by competent authorities as scirrhus, in a lady whose other breast had been extirpated for that disease. Not long after she died of asthma, from diseased lungs; the scirrhous tubercle appearing not only in the chest, but in several of the abdominal viscera."

Whether the use of the chloride and the disappearance of the growth were a mere coincidence or not, I may at least adduce this case as confirmatory of the effects of treatment in my own cases; where, of course, the patients having happily recovered, the precise nature of the tumours could not be certainly ascertained.

Dr. Walshe (p. 207) remarks, that the external use of iodine, in the form of ointment, sometimes completely removes tumours possessing the character of scirrhus (where it has been had recourse to at an early stage of their development), is a fact of which we have witnessed some examples." Further on, the same distinguished author adds, "Nor does my present experience (1846) allow me to conceive a single doubt that tumours *actually and truly scirrhous in structure*—tumours which would have run the common course of cancer—may be arrested in their progress, by early and judicious use of these agents. Mr. G. N. Hill's cases ('Edinburgh Med. and Surg. Journal,' vol. xxv., p. 282, 1826) afford very decisive evidence to the same effect; and Dr. Ashwell's statements on the subject (see 'Cancer of the Uterus') are strongly encouraging." The convictions of Mr. Travers on this subject (one of our highest authorities) are peculiarly strong: "By an indolent scirrhus," says this writer, "I mean an incompressible, permanent tumour, possessing for many years no distinguishing character of that disease; but in a deranged state of health assuming its general character, and at a particular period of life breaking up into actual cancer. I do not entertain a doubt that such a tumour *may be, and often is, absorbed in its first stage, and need not therefore of necessity follow this course.*"

It may, then, be assumed that the diminution and disappearance of tumours, regarded as scirrhous, is not beyond the pale of a reasonable credulity. Of whatever nature the tumours to be described by myself may have been, they were morbid enough, if even only simple inflammatory indurations, to originate and keep up symptoms so distressing, as to destroy almost entirely the comfort of life. It cannot, for example, be a small amount of suffering which has to be endured, where a *hard* tumour, the size of an adult head, has for months, perhaps years, by its bulk and weight, pushed out of their place the contiguous viscera, and pressed severely on the ganglia, trunks, and branches of the neighbouring nerves. Nor can the bleedings, frequently attendant on such growths, fail to alarm, not only from the syncope and long-continued exhaustion, which is their immediate result, but also from the impaired health and dropsical effusions of which they are so often the precursors.

Many of my cases have been associated with severe, frequently-recurring, and sometimes almost constant pain, for weeks and months together, in or about the growth. Emaciation, where the tumour was large, has not been an uncommon event. Nor ought the possibility of pregnancy (on which I have fully dwelt in my work on 'Female Diseases'), and its dangerous and ofttimes fatal results, to be excluded from the long list of distresses occasioned with these tumours.

Prior to the detail of the appended cases, it is necessary to make the following observations.

That, in all of them, treatment (especially by iodine, in tincture and ointment) had been long pursued; that nutritious, unstimulating diet, mild malt liquor, and light wines were allowed; that resort was only occasionally had to *leeching* near, not over, the seat of pain; and still more rarely to cupping on the loins; that *purgatives* and aperients were exhibited only when it was evident that the bowels required to be unloaded; that *setons* over the site of the tumour produced, in several instances, marked benefit; and further, that in all the numerous cases which have fallen under my notice, the *recumbent posture*, and, as far as possible, the avoidance of sexual intercourse, but particularly the former, have been *strictly* enjoined.

*Case* 1. *Large hard tumour of the uterus, with excessive hemorrhages, and slow but complete diminution of bulk.*—April 22, 1843. Miss ——, aged 48, resides near Hounslow, and has formerly been under the care of Dr. Blundell and her own medical attendant. First perceived a tumour about the size of a small melon three years ago. It was then low down in the hypogastric region. Her health did not then suffer, but two years since menstruation became profuse, and there was also much uterine bleeding. Iodine was used, and various means were employed to arrest the hemorrhages.

Now the tumour is as large as a moderate sized adult's head, lobulated, and in several of its more prominent portions of *extreme* hardness. It reaches nearly as high as the umbilicus, and protrudes the abdominal integuments, giving to the patient the appearance of a pregnancy of the fifth or sixth month. Has frequent cutting pains in and about the tumour, and is greatly inconvenienced by the weight, pressure, and tension. The growth is not tender to the touch, not even in those portions where there is constant pain. Walking is difficult. Internally the vagina is capacious, and there is much mucous discharge. The os uteri is patulous; and its lips, together with the cervix, are soft and swollen, but without any spots of induration. The most alarming symptom is the hemorrhage; which, without any assignable cause, is sometimes so excessive as to induce long-continued faintness. Cold applications are often employed for several days before the bleedings are arrested. She has lost flesh, and is very weak; her countenance is anxious and very pallid; pulse 110; bowels constipated; appetite bad; she is restless and irritable, and often extremely depressed. Tincture of iodine, six minims, three times a day, in a little sugared water, and the iodine ointment every night over the tumour, were prescribed.

[For some years this patient was watched; frequently the iodine was suspended, and, on account of the exhaustion from the bleedings, other remedies used. In Nov., 1849, the patient's health was very much improved, and the tumour was the size of an orange. In May, 1851,

Dr. Ashwell could scarcely make out the presence of any tumour. In March, 1852, the tumour could not be felt at all externally.]

*Case* 2. *Hard tumour of the uterus, of considerable size; diminution and eventual disappearance.*—[Mrs. B., æt. 48, when admitted under Dr. Ashwell at Guy's Hospital, had a large hard uterine tumour of the size of a child's head. After being in hospital several months, and having received great relief, she left May 15, 1837, but continued as an out-patient and was taking six minims of the tincture of iodine in an ounce of water three times a day. Dr. Ashwell says:]

For several months after June, 1837, I occasionally saw this patient, the tumour continuing slowly to diminish. From that time, I lost sight of her till May, 1853, when she called to consult me about some affection of her lungs attended with cough. On examination externally, *no tumour was perceptible,* even when the fingers were pressed deeply down behind the pubis, and the cervix uteri is quite healthy.

Mrs. B. married in November, 1837, the tumour then being as large as a small melon. She has been pregnant only once, and aborted at two months; this was very soon after marriage. She had ceased to menstruate two years. The tumour decreased rather more rapidly for two or three years after her marriage, and she assures me that for the last four years it has been as imperceptible as it is at present.

*Case* 3. *Hard tumour of the uterus; treatment by iodine, and eventual disappearance.* (Communicated by Mr. Richard Wedd, of Cheshunt.)—Mrs. —, aged 46, had tumour on the left side of the abdomen, occupying the space between the umbilicus, the anterior superior spinous process of the ilium, and the symphisis pubis. It was *hard,* not very painful to the touch, and about the size of the fœtal head. The os and cervix uteri presented no abnormal indications. The tumour could be balanced by the fingers placed on the cervix, and when pressure was made upwards, the tumour was distinctly elevated, and protruded the abdominal integuments, so much as to render its outline distinctly visible. External pressure above and around the growth forced down the whole uterus much lower in the cavity of the pelvis, and left no doubt that the tumour was really uterine. Her health was not at first much affected, although she suffered almost constantly, and at times severely, from shooting pains through the uterus, extending to the back, and coursing down to the inguinal region on either side. There were also frequent and large hemorrhages during the catamenial intervals, and menstruation was profuse, lasting six or seven days. There was no interference with defecation, and the bladder was easily relieved.

Mrs. —— was treated by leeching and opiates for the pain. She was enjoined the recumbent position, and her diet was carefully regulated. Iodine was long taken in the form of tincture, and the iodine ointment was sedulously employed, with some intervals, for nearly two years. At this period the tumour was not diminished in size, and but

little in hardness, although there was less pain, and, as her general health seemed giving way, she was advised to go for a lengthened period to the sea side. She removed to the south coast of Devon; and although I did not see her during her absence of two years, I heard occasionally that the tumour was diminishing, and that she improved much in health. On her return to her former residence in Kent, I saw Mrs. ——. She told me that in a few months after her arrival at the sea, the bleedings at the menstrual period and during the intervals began to lessen; that her appetite and general health improved, that within six months from her removal the tumour had sensibly diminished both in hardness and size, and that the pain had subsided in marked degree. On careful examination, now four years from its first recognition, I could discover no traces of the tumour. The abdomen was soft, more flaccid than usual, even when, as in this case, the integuments had been distended by many quickly occurring pregnancies. The os and cervix uteri were entirely natural.

*Case* 4. *Hard and large tumour of the uterus; eventual and almost entire disappearance.*—In November, 1840, I met Sir James Clark in consultation on the following case:—Mrs. ——, aged 40, has been married eleven years, and, although pregnancy has occurred, she has never borne a living child. Her health has generally been good, her temperament lively, and her habits active. During the summer of the present year Mrs. —— had a severe illness, primarily inflammation of the peritoneum, but followed by fever. In the latter part of September, 1840, she first discovered an enlargement in the hypogastric region, immediately above the brim of the pelvis and towards the left groin, which was tender, but not very painful. Soon afterwards, however, it became larger; and as there were dartings about the growth, and occasional paroxysms of severe suffering, a careful examination was made, (Nov. 20), *when a tumour of considerable induration* was discovered. It had risen three or four inches towards the umbilicus, and although it passed a little to the right of the mesian line of the body, by far the greater portion was in the left hypogastric region. The cervix uteri was swollen, patulous, and indurated in several spots. There was no difficulty in relieving either the bladder or the intestines, but there was some emaciation, and the pain was sufficient to induce her to keep almost constantly the recumbent position, and confine herself entirely to the house. A light nutritious diet of fish, chicken, and mutton, with some wine and water, was ordered; a mild aperient pill, and the following mixture were also prescribed:—Ammoniated tartrate of iron, one drachm; tincture of iodine, half a drachm; compound tincture of cardamoms, one ounce; distilled water, seven ounces: two tablespoonfuls to be taken three times a day. The local measures were, leeches on alternate mornings to the tumour, the use every night of the hip-bath, and the constant application, by means of linen compresses covered by oiled silk, of the poppy fomentation.

Such was the plan pursued for nearly five weeks, at the end of which

time the growth had lessened considerably, and there was but slight pain. At this period (January, 1841) the weather was intensely cold, and to derangement of the health consequent on this state of the atmosphere, but more especially to excitement, an unfavourable change both in her health and in the tumour was clearly attributable.

Greater caution, however, was observed, and the morbid enlargement by the end of February, did not exceed the bulk of a large Seville orange; it having, in November, equalled in size a fœtal cranium at the full period of gestation.

During many subsequent months, iodine, internally and externally; mercury, to the extent of producing slight salivation; quinine, and various stomachics and cordials, were exhibited; and, in April, the tumour had subsided so much, and appeared to be altogether in so quiescent a state, that a seton was inserted over its site, in the left hypogastric region. Some weeks afterwards a larger seton was made, nearly in the same situation, by Dr. Kirby, of Dublin. Sea-bathing was recommended, and when I last saw the lady, in August, 1841, her health was greatly restored; the tumour was so much lessened as to have sunk quite within the pelvic cavity, the pain having almost entirely ceased; and the cervix was much more healthy. In 1845, and, subsequently in 1851, I was informed that not a vestige of the tumour remained, and that the general health was exceedingly good.

*Remarks.*—I could narrate several more examples of nearly entire disappearance of these large tumours, and a still greater number where after having diminished very considerably in bulk, they have, for many years, remained entirely stationary. In both classes of cases the attendant symptoms have passed away, and there has been little or no interference with the comfort of life. All the cases which have fallen under my care prove the value, where any doubt exists of the precise character of uterine growths, of cautious and long-protracted treatment. The continuance of pain, hemorrhage, and emaciation, with a stationary condition of the tumour, although unfavourable, ought not to arrest the treatment; while, on the contrary, any diminution of these painful accompanyments should be regarded as sufficiently auspicious to encourage a further continuance of remedies. In *every* similar case the means recommended may not be attended with like success; still, in by far the greater number, I am strongly of opinion their employment will be decidedly efficacious, if not entirely curative. We are not expected to determine what may be the final issue of many uterine tumours, nor to deny the possibility of eventual malignant development, nor to promise a cure; but, judging from the narrated cases, and many others which I am sure have occurred to different practitioners, I may truthfully declare, that in many such thus treated, entire disappearance, or, at least, an arrest of further growth will be the result—*Lancet, Feb.* 18, 1854, *v.* 180.

## 151.–ON THE EFFICACY OF THE WATERS OF KREUZNACH ON UTERINE TUMOURS AND HYPERTROPHIES.

By Dr. E. H. Sieveking, Assistant Physician to St. Mary's Hospital.

[The water from the chief spring is described as being perfectly clear and transparent when fresh, of a temperature of 55° Fahr., and of a salt and bitterish taste. After a time it becomes dull, and brownish flocculi form and are precipitated.]

The analysis of this water by Bauer, as given in Professor Osann's great balneological work, shows sixteen ounces of the water to contain above ninety grains of mineral constituents, distributed in the following manner:—

| | |
|---|---|
| Chloride of sodium... ... ... ... | 72.922 |
| Chloride of potassium ... ... ... | 0.971 |
| Chloride of lithium ... ... ... | 0.075 |
| Chloride of calcium ... ... ... | 13.276 |
| Chloride of magnesium ... ... ... | 0.251 |
| Bromide of sodium... ... ... ... | 0.307 |
| Iodide of sodium ... ... ... ... | 0.003 |
| Carbonate of magnesia ... ... ... | 1.351 |
| Carbonate of strontia ... ... ... | 0.683 |
| Carbonate of baryta ... ... ... | 0.299 |
| Carbonate of iron ... ... ... ... | 0.199 |
| Carbonate of manganese ... ... | 0.009 |
| Alumina... ... ... ... ... ... | 0.021 |
| Silica ... ... ... ... ... ... | 0.313 |
| | 90.680 |

The specific gravity of the water is 1,004.

The process by which the chloride of sodium is extracted from the water necessarily alters the relation ol the constituents found in the bittern; while it removes almost all the chloride of sodium, it leaves those elements to which the peculiar effects of the Kreuznach waters are particularly ascribed in a much more concentrated form. This bittern or mother ley is the semifluid residue found in the evaporating pans; it presents a brownish yellow colour; it is translucent and clear, and has a soft soapy feel: its sp. gr. is 1,307 to 1,314. It smells like marine algæ, and has an intensely pungent and acrid taste, which is not effaced from the lips and tongue for some time after it has been applied. It is very deliquescent—a property which renders its transportation in anything but china or glass vessels impossible, as it gradually oozes and makes its way through all porous materials, and through the strongest casks and earthenware jars. It is rarely employed in the concentrated form, but merely as an adjunct in ordinary water baths, or with the water of other mineral springs. Of late, the bittern has been still further evaporated to dryness, in which state it forms an amorphous light brown mass, of which I present a specimen to the

society. Its taste and properties are the same as those of the mother ley, but it offers the advantage of being much more portable. The following is an analysis of the mother ley by Osann. He found sixteen ounces to contain 2625.72 grains, or about one-third of solid matter, distributed in the following manner :—

| | |
|---|---|
| Chloride of calcium ... ... ... | 1577.71 |
| Bromide of calcium ... ... ... | 388.72 |
| Bromide of potassium ... ... ... | 92.82 |
| Chloride of magnesium... ... ... | 38.44 |
| Bromide of sodium... ... ... ... | 154.10 |
| Chloride of sodium ... ... ... | 60.34 |
| Chloride of potassium ... ... ... | 17.30 |
| Alumina and suboxide of iron ... | 35.66 |
| Crenic and apocrenic acid, and two peculiar resinous matters, with traces of iodine... ... ... ... | 216.16 |
| Water of crystallisation and loss ... | 44.50 |
| | 2625.75 |

The quantitative analysis of the mother ley varies in almost every examination that is made, owing to the accidental variations of condensation, and fortuitous changes produced by the process of extracting the common salt; but all agree in showing the presence of a large proportion of bromide of calcium. An analysis given by Dr. Prieger, in a work entitled 'The Mineral Waters of Kreuznach,' published by Mr. Churchill in 1846, exhibits a considerable difference in the relation of the constituents; it is as follows:—

| | |
|---|---|
| Bromide of calcium ... ... ... ... | 24.12 |
| Chloride of calcium ... ... ... ... | 9.29 |
| Bromide of magnesium ... ... ... | 0.48 |
| Iodide of magnesium ... ... ... | 0.18 |
| Chloride of potassium ... ... ... | 0.80 |
| Chloride of sodium ... ... ... ... | 1.28 |
| Water and loss... ... ... ... ... | 63.85 |
| Total ... ... ... ... | 100.00 |

[We need hardly say, that it is in scrofulous diseases of all kinds that these waters are more especially recommended, especially in cases of tumours or swellings where the absorbents need a stimulant; but it is in diseases which are commonly not amenable to treatment that the benefit is most remarkable, such as *fibroid tumours of the uterus and ovaries*, and other *hypertrophic conditions of these organs.*]

It appears from the cases recorded by Dr. Prieger, jun., in an interesting pamphlet recently published, that under the use of the Kreuznach waters they may be softened, reduced, and even entirely dispersed.

There is nothing in the structure of the tumours which renders such a result improbable. Until they have become very large, they are freely traversed by blood-vessels, the agents of all advancing or retrograde metamorphoses; and as long as the organic connexion between the morbid growth and its matrix is freely kept up, we may reasonably hope that our dynamical remedies may exert an eliminating effect, provided we can hit upon an agent likely to stimulate the system in a manner proportionate to the existing disease. Any one who will take the trouble to go to the museum of St. George's Hospital, and examine some injected specimens of uterine fibroid tumours, will find that they may be plentifully supplied with blood-vessels. The more extensive their growth, the more they seem to be placed beyond the pale of the organisation; and they gradually become, like foreign bodies, a source of mechanical irritation, or passive obstacles to the organic functions: they then necessarily cease altogether to react upon internal remedies. But I hold that the structure of these fibroid tumours is a further explanation of the comparative facility with which they yield to the resolvent action of the Kreuznach waters. They are, as I have attempted to show elsewhere, essentially an hypertrophic condition of the true uterine tissue, differing from it by that metabolic power which gives a morbid impulse, but identical with it in those points which the microscope and chemical reagents reveal. I the more confidently put forward this view, as I find it corroborated by a recent writer in the Reports of the Pathological Society for 1852–3. Dr. Bristowe there demonstrates in a most satisfactory manner, that the so-called fibrous tumour is absolutely identical in point of structure with the walls of the uterus, whether examined in the unimpregnated or impregnated condition.

The evidence which Dr. Prieger, jun., brings forward in proof of these tumours being amenable to treatment by the Kreuznach waters, is of a character to demand our serious attention. Those who will study his paper, will be constrained to conclude that he thoroughly understands his subject, and that he is not led away by that species of enthusiasm which frequently prompts the administrators of favourite remedies to regard them as agents of an universal efficacy. His diagnosis is cautious and well founded; and he gives us accurate statistical details of his experience.

The results of the application of the Kreuznach waters in 86 cases of hypertrophic states and fibroid tumours of the uterus and its appendages, which have been under his care, are as follows:

Thirty-one were entirely cured; of these, 2 were hypertrophy of the entire uterus; 16, partial hypertrophies of the uterus; 6, fibroid tumours of the uterus; and 7, tumours of the ovaries. In each case, no trace of the disease remained at the conclusion of the treatment.

Twenty-nine were partial recoveries; the troublesome symptoms having been removed or ameliorated, and the swelling or tumour

having been much reduced. Of these, 3 were hypertrophy of the entire uterus; 4, partial hypertrophy of that organ; 9, fibroid tumours of the uterus; 5, fibroid tumours of the ligaments; 6, ovarian tumours; and 2, ovarian tumours complicated with hypertrophy of the uterus.

Nineteen cases were benefited so far that the continued growth of the morbid formations was arrested, without any or but a trifling reduction in size. Of these, 2 were hypertrophic states of the uterus; 8, fibroid tumours of the uterus; 4, fibroid growths of the uterus; and 5, ovarian tumours.

Seven cases presented no change whatever either in the size of the tumours, or in regard to the morbid symptoms.

The method pursued and the duration of treatment by the Kreuznach waters necessarily varies according to the duration and extent of the disease, and according to the constitution of the individual. One remarkable and well authenticated fact regarding its influence upon the organism, is the continuance of the peculiar action it has set up, long after that action has been initiated, and the remedy has been discontinued. Dr. Prieger has repeatedly observed that after the conclusion of the course in August or September, the progressive diminution of the local affection continues until the following spring. Thus in a lady who had employed the baths for eight weeks, on account of an ovarian tumour, previous to the 1st Sept. 1851, Dr. Prieger was unable to perceive a notable diminution of the tumour when she quitted Kreuznach, nor could her own medical attendant in the following January detect a marked change; still, a few months later, the tumour was found to be much reduced, and she had made use of no remedies in the interval but an occasional local application of the Kreuznach water.

We have alluded to the different modes in which the Kreuznach waters are exhibited. A few more detailed remarks on the subject may be acceptable. When administered by the mouth, the water may be taken by itself, or combined with milk, whey, or other mineral waters; and either warm or cold; the quantity varies from one to six beakers, or from a few ounces to two and more pints; it is taken in the morning at short intervals, and moderate exercise is enjoined during the potations. The baths are commonly employed tepid at a temperature of about 90° F.; at the commencement of the course the patient is ordered the use of the water only, while its power is subsequently and progressively increased by the addition of more or less of the bittern. Dr. Prieger informs us that it is usual to commence with one quart, or about 4 lbs. of the latter for baths for adults, while a less quantity, proportioned to the age of the individual, is used for children. If the inspissated bittern be employed, we should use from one to two pounds for the bath of an adult. The increase in the quantity of bittern in the baths must be gradual; and in the same way, after the climax has been reached, it is progressively diminished;

"for the whole object," to use Dr. Prieger's words, "of this management would be destroyed by a too quick reduction of the effective power, and before the accustomed irritation of the skin" (a species of critical eruption) "had subsided." The bath is rarely used more than once a day, or for more than from five to twenty minutes at a time; its action is accelerated by friction of the affected parts, or of the whole body. Rest is enjoined after the use of the bath in very delicate individuals, while gentle exercise is recommended to those of a corpulent or more robust habit. The topical applications vary equally in strength and duration according to the constitution of the individual patient; and when applied as gargles, as enemata, or as vaginal injections, we must necessarily use some judgment in regulating the minutiæ of temperature, concentration, and frequency of exhibition.—*Association Med. Journal, Dec.* 2, 1853, *p.* 1059.

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## 152.—ON THE EXCISION OF OVARIAN TUMOURS.

By John E. Erichsen, Esq., Surgeon to University College Hospital.

[At a meeting of the North London Medical Society, Mr. Erichsen read a paper on the excision of ovarian tumours. After some introductory remarks, he related the case of a lady, aged 65, and the methods employed to form the diagnosis, and determine the selection of the mode of operation.]

The room having been warmed to a temperature of 80°, the patient was laid on a table of convenient height, covered with doubled blankets, so that the legs hung over the end of it, chloroform administered, and the bladder emptied. (The bowels had been cleansed out with a purge on the preceding day). The operation was commenced by an incision about five inches in length, made in the linea alba from the umbilicus downwards, the tissues carefully incised, and the peritoneum opened, when the tumour presented itself. Into the part on the left side, that was soft and fluctuating, a large trocar was introduced, and about a gallon of very thick, pasty, dark-coloured fluid drawn off. The hand was now introduced into the cavity of the abdomen, and the more solid part of the tumour (which extended high up on the right side, lying against the liver) was drawn down and brought out through the wound. In doing this, a few adhesions, that passed between the anterior wall of the abdomen and the tumour, were broken through. The mass, which was of considerable magnitude, was now lifted out of the abdomen (the intestines, being protruded, were passed back with soft warm cloths), and was found to be connected by a broad attachment to the right broad ligament. This pedicle was short, wide, and composed principally of large blood-vessels, with some connecting cellular tissue; it was drawn well forwards. A nævus-needle, armed with strong whip-cord, was passed across it, care being taken to avoid any of the bloodvessels. The peritoneal investment of the pedicle

was then dissected off to the extent of about a quarter of an inch in breadth all round, and the whip-cord ligature firmly tied on either side along the line. The tumour was then detached by cutting across the pedicle, half an inch above the ligature. The wound was closed by a series of interrupted sutures, closely applied, and at the lower part by two hare-lip pins, with figure of 8 sutures; round these the ligatures of the pedicle were firmly twisted so that the cut stump projected out of the abdomen between the lowest pin and the inferior angle of the wound. The abdomen was then supported with cross strips of plaster and a bandage. Mr. Erichsen then detailed the after treatment adopted. The patient left her bed on the sixteenth day.

He considered that the case illustrated well the surgical management to be adopted. The principal points in the operative procedure, that in his opinion required attention, are to regulate the length of the incision to the size and character of the tumour. The more fluid the tumour, the less extended need the incision be. As the solid part of the mass must necessarily be extracted entire, an incision for its ablation must be proportioned to its magnitude and shape, and the surgeon should not advocate either the small or large incision exclusively. The ligature of the pedicle is an important point, as unless this be properly practised there will be no inconsiderable risk of the supervention of secondary hemorrhage. It is best done by transfixing with a nævus-needle, carrying a whip-cord ligature, and tying on each side as tightly as possible. The dissecting downwards of that portion of peritoneal investment of the pedicle, across which the ligature is tied, appears to be of much importance in preventing the constriction and sloughing of the otherwise included line of serous membrane, and thus lessening the dangers of peritonitis. It is a part of the operation, however, attended by some risk, by the chance of wounding the blood-vessels, which are here thin, walled, and large, that they may be avoided by careful manipulation. After tying the pedicle, it is of considerable moment that the ligatures should not lie in the peritoneal cavity, and that the stump should not slough off within the cavity of this membrane, as under each circumstance peritonitis of a severe or fatal character would probably ensue. All this is best avoided by drawing the pedicle well forward, so as to project above the wound, and attaching the ligature to the hare-lip pins, with which the lower line of the incision is closed. The after treatment consists in keeping the patient in a warm room, giving a liberal supply of ice, with opiates to tranquillize the system, and arrest peristaltic action, to draw off the urine, and not to attempt to relieve the bowels, which may be left confined for many days without inconvenience to the patient. In considering the subject of ovariotomy, two questions present themselves —first, as to whether the operation is a sound one, and ought to be retained in practice; and secondly, if retained, in what class of cases it should be had recourse to. In answer to the first question, the course taken by ovarian tumours varies greatly. In some instances

these growths do not appear to be incompatible with prolonged existence and a fair share of health; in other instances, again, after remaining quiescent for some length of time, they assume considerable activity of development, and interfere so seriously with the other abdominal organs, and with the general operations of the economy, that life is attended with great misery and discomfort; and in a third class of cases they rapidly and steadily run their course to an unfavourable termination. After a time, in the majority of instances, the tumour may be materially lessened in bulk by tapping; but when once this operation has been performed, it will require to be repeated with increased frequency, the intervals between each succeeding tapping being diminished, and then a fatal termination at a comparatively early date may be looked for. Mr. S. Lee states that of 46 patients who were tapped, 37 died, and only 9 recovered, and that of the 37 who died, more than one half did so in four months from the first tapping; 27 out of the 37 in the first twelve months, and of these 18 were only tapped once. The objection had been raised against ovariotomy that the mortality from it was so high as not to justify a surgeon in performing it. Undoubtedly a very high rate of mortality after an operation would constitute a very serious bar to its performance, and the more so if it could be shown that the disease for which it was practised was not necessarily fatal, or even a very serious one. Thus Mr. Phillips had collected the particulars of 61 cases in which ovarian tumours were extracted; of these 35 were successful, and 26 died. Mr. Lee gave 90 cases; of these 57 recovered, and 33 died: and Dr. Robert Lee, the most recent writer on the subject, had collected 102 cases of ovarian extraction, of which 60 did well, and 42 terminated fatally. From these statistics it would appear that the mortality after the removal of ovarian tumours amounted to rather more than one in every three cases. This appeared to Mr. Erichsen not to be excessive, when compared with the result of operations, various severe surgical injuries, or scrofulous diseases. In the next place, ought ovariotomy to be performed in all cases, or even in the majority of instances of ovarian disease? or ought it to be limited to a few and exceptional cases, and practised as a last resource? The most ardent advocate for this operation would scarcely, he thought, advise that an attempt should be made to extract the ovarium from every woman labouring under tumour of this structure, but would rather recommend the employment of palliative treatment until the growth had begun to interfere seriously with the comfort of existence, or with the healthy action of the abdominal organs, the patient wasting, suffering much discomfort from her size, with difficulty in breathing, repeated vomiting, gastric irritation, &c. He confessed he saw no chance of giving relief or of prolonging her existence except by the removal of the tumour; medical treatment was of no avail in those cases, and tapping only gave temporary relief; therefore one must either leave the patient to her fate, or have recourse to the ablation of the tumour, which, it had

already been shown, might be done with the prospect of success in nearly two cases out of every three. The question of diagnosis had to be considered in two of its bearings: first, as to the existence of such adhesions between the enlarged ovarium and the other abdominal organs as to render the extraction impossible; and secondly, the diagnosis between ovarian and other abdominal tumours. Such adhesions as would prevent extraction having been met with in rather more than one-third of the whole number of cases operated on,—according to Dr. Lee, in 60 out of 162 cases,—the diagnosis of this complication was of extreme importance. Its existence might in general be suspected when it was ascertained that the patient had been the subject of attacks of peritonitis; when the abdominal tumour did not appear to change its position on the patient taking a deep inspiration and then expiring freely; and when, on the patient raising herself into a sitting posture, the sac did not tend to move forwards into the space between the recti muscles. So also much light might be thrown upon this important point by ascertaining the existence of a crepitant or crackling sensation between the anterior abdominal wall and the tumour, and more particularly when the tumour, being tapped, drew down with it the abdominal parietes, or sunk into the pelvis without exercising any traction on those parts. The conditions also of the pelvic viscera,—viz., the bladder and uterus, as ascertained by examination with the sound, might tend to show whether connexion existed in this quarter or not. But in other instances, and more particularly when the mass is bound down posteriorly, there was no probability of determining this point, and then the surgeon might, to his great annoyance, find that after laying open the abdomen the operation could not be completed, and the tumour require to be left. In those cases in which there was any reason to suspect the presence of adhesions, it was a wise precaution to make a small exploratory incision into the abdomen, through which the fingers or hand might be introduced, and the connexions of the tumour examined. If these were too extensive to admit of removal, the aperture might be closed, and possibly the patient might escape without any very serious consequences ensuing, as in these cases the peritoneum had in a great measure lost its character as a serous membrane, and was not so susceptible of the diffuse and destructive forms of inflammation that would otherwise be likely to occur in it.—*Lancet, Dec.* 24, 1853, *p.* 611.

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153.—*Arrest of Consecutive Hemorrhages in Cancer of the Neck of the Uterus, by the Perchloride of Iron.*—We have employed, observes M. Remilly, the perchloride of iron to arrest the uterine hemorrhages which so frequently accompany cancer of the neck. It is administered by injections, in the strength of 15· of the perchloride to 250· of water. The dose required is usually 15 grammes of the perchloride (5 drachms English). A woman, aged 60, suffering from cancer uteri, voided

daily large clots of blood from the vagina, some as big as the fist. Two injections, (Sept. 12,) at the interval of five minutes, sufficed to arrest the hemorrhage for three days. On the 15th, the blood flowed again, when two fresh injections were administered with success. On the 16th and 17th, the injections were continued without any recurrence of hemorrhage. On the 18th, the patient, who had lost no more blood, became pale and faint after the second injection,—symptoms which seemed referrible to the remedy, as the external organs of generation were temporarily swelled. She soon, however, recovered; and, from October 26 to November 19, has remained free from any return of the bleeding.

A second patient, aged 49, suffering from soft, vascular, fungous growths from the os uteri, accompanied with a discharge of dark fetid blood from the vagina, was subjected to the same treatment. The first injection produced an immediate disappearance of the discharge. The day following there was a second discharge, which was not arrested by the injection, but the patient declared that the instrument had been badly introduced. The next day the remedy was used with more care and with complete success.

A third and a fourth case are related by M. Remilly, illustrating the decided benefits ensuing from this plan of treatment; and he remarks, that not only does the injection relieve the patient from troublesome and often offensive discharges, but that it retards the progress of anemia, and prolongs her existence. It is impossible to say what effect the perchloride may have upon the future progress of the cancerous disease; but it may assist, by arresting weakening losses of blood, in rendering more decidedly beneficial tonic and ferruginous remedies employed so often without the least success in combating cancer and its complications.—*Bull. de Thérap.—Medical Times and Gazette, Feb.* 25, 1854, *p.* 191.

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## 154.—ON CANCEROUS AFFECTIONS OF THE OS UTERI.

By Dr. Robert Johns, A.B., &c., Chairman of the Midwifery Court of Examiners of the R.C.S., Ireland.

[In a paper read before the Surgical Society of Ireland, Dr. Johns draws the following deductions from his investigations into the best modes of treating these diseases.]

1. That cancerous affections, when confined to the cervix uteri, are in many cases successfully treated by removal.

2. That the only chance of preventing a return of the disease is to remove in a healthy part of the cervix from which it grows.

3. That the best and most expeditious operation is amputation of the cervix in a part free from disease.

4. That as hemorrhage is very likely to follow such an operation, a ligature ought to be thrown around the cervix, as high as possible, for twenty-four or thirty-six hours before amputation.

5. That cauliflower excrescence is a disease to which this treatment is very applicable; as it rarely if ever extends beyond the neck of the uterus, and as it is one of the forms of cancer which is least liable to return after the excision of the parts.

6. That amputation of the cervix, in hypertrophy and such like affections of this part, which are curable by simpler means, is not justifiable.

7. That extreme prostration alone, or enlarged superficial inguinal glands, ought not to be a bar to operation.

8. That as inflammation in many forms is likely to follow this operation, an appropriate preventive treatment ought to be adopted.

9. That the use of the actual cautery expedites cicatrization after the removal of the cervix.

10. That as amenorrhœa and dysmenorrhœa are likely to follow on extensive ulceration of the os and cervix uteri, and also when these parts have been removed, the uterine sound ought to be passed from time to time during cicatrization, and for some time afterwards.

11. That with a view to correct the cancerous diathesis, the patient might be put under a course of treatment for some time previous to, and subsequent on, the operation.

12. That a particular form of vertigo is a frequent symptom, and an important diagnostic of uterine disease.

13. That as females suffering from uterine affections are very prone to intercurrent affections, which sometimes prove fatal, every means should be adopted to prevent their occurrence.

14. That in all cases of suspicious vaginal discharge, manual examination *at least* ought to be employed.—*Dublin Quarterly Journal, Feb.* 1854, *p.* 110.

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155.—*On the Galvanic Cautery in the Treatment of Uterine Disease.* By Mr. Ellis.—[The actual cautery of the ancients has given way to the more painful potential cautery of the moderns. M. Jobert was the first to recommend its application to the uterus in situ in chronic diseases of that viscus.]

Mr. Ellis alludes to the researches of Mr. Marshall, who, in his investigations on 'Electric Heat in Surgery,' appears to have been the first who corroborated the views of the ancients respecting the remedial agency of the actual cautery. This gentleman used only a heated wire, which necessarily acted upon a small surface, and was consequently inefficient. The experiments of the author soon led him to adopt a better method, by which he was enabled to concentrate the heat evolved over a considerable surface,—an important element in cauterization by electric heat. The instrument he employed was a good-sized silver catheter, straightened out, with the end cut off, which formed the body of the instrument. It was then slit open at the upper end and broached, so as to form a socket for the porcelain

cauterizer, and also to allow the internal wires to pass out. Within the catheter are placed the two conducting wires, insulated, they being at one end connected with the wires of the battery, and at the other with a piece of platinum wire, which is coiled round the porcelain cauterizer. The battery employed is Groves', of four or five cells, and of these two are required to heat the porcelain to whiteness, which degree of heat is essential. From this simple contrivance the instrument derives its principal value, the heat being thus both intense and permanent. When ready for use it is entirely under the control of the surgeon, a matter of vast importance in its application. The patient to be operated upon should be in the usual obstetric position, and the batteries and wires concealed from her, so that she should not have any idea of the nature of the remedy. A good light and speculum are essential, and the speculum best suited is the common circular glass one, or one of glass coated with gum-elastic. Neither the two-bladed metallic nor the conical glass forms are at all suited; the former because it allows all the heat from the blades of the speculum to be concentrated on those portions of the vagina which bulge between them, and the latter because it is liable to be easily expelled by the vagina. A full view of the os and cervix uteri having been obtained, the os should be cleansed with a piece of cotton or wool, and when the cautery has become intensely heated, it should be steadily introduced and quenched in the diseased tissue, the duration of the application and the depth of its introduction depending upon the effect required. The eschars thus produced are marked with a whitish-yellow border, and the cervix often visibly contracts under the application of the cautery. The author insisted upon heating the porcelain to whiteness, otherwise slight hemorrhage may occur, from the instrument dragging off a portion of mucous membrane, which invariably adheres to the instrument under such circumstances; the surgeon should also remember that the degree of the eschar is entirely under his control. He then stated that the cases where it was applicable were those of induration of the os and cervix uteri, of ulceration of the os, and in prolapsus uteri, and also in prolapsus of the anterior wall of the vagina.—*Lancet, Nov.* 26, 1853, *p.* 503.

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## 156.—SPONTANEOUS CURE OF POLYPUS UTERI.

By Dr. F. H. Ramsbotham.

[Three cases of this description have been lately published, one by Mr. Canney detailed in the succeeding article (157) and two others by Dr. Ramsbotham in the 'Med. Times and Gazette' for Jan. 22 and Feb. 5, 1853 (vide *Retrospect*, vol. xxvii, p. 254). Dr. Ramsbotham relates another instance as follows:

Dr. R. was called to a case under Mr. Stephenson, of Dalston. The patient, aged 33, was the mother of three children, and had been lately the subject of menorrhagia and leucorrhœa.]

From the time the menorrhagia began to annoy her she has been subject at intervals to what she then considered a descent of the womb. She was in the habit of returning the protruded substance, allowing herself two or three days' rest, when the inconvenience was for a time suspended. On any exertion, however, it recurred, and on each such occasion she treated herself in the same manner. She now believes this substance was the tumour; and of this, indeed, I think there can be little doubt. She states also, that, on the fourth day after her last labour, the womb came down, remained external a whole day, and was returned by the medical gentleman then in attendance. Whether this substance was really the uterus, or the polypus enlarged by the growth of pregnancy, I have had no opportunity of learning, but I suspect the latter was the case.

Mr. Stephenson was first called to her about a year ago, when she was suffering from common continued fever, being much debilitated, and greatly blanched. In a week she was free from fever, and continued to follow her ordinary mode of life, until the end of last September, when an attack of diarrhœa induced her to seek his advice again. The hemorrhage was now almost incessant; she complained of a distressing sense of weight at the vertex, much pain in the lumbar region and groins, particularly the left, and a sensation, when she sat down, as though the whole of the lower part of her bowels was being pressed upwards. She suffered also from violent bearing-down pains when she stood, and was far more easy in the recumbent position. In the early part of October she became again the subject of continued fever, attended by hemorrhage, headache, and severe vomiting. During one of her attacks of sickness, a fleshy mass was protruded from the genitals, but without pain; this she took to be the uterus, and passed it up again. Mr. Stephenson was summoned to her in haste, and the following I give in his own words:—

"On examination I found a soft, smooth, loose, membranous body, occupying very nearly the whole length of the vagina, of a pyriform shape, free at the lower end, and attached to the uterine structure above, at about half-an-inch beyond the mouth. I could pass my finger completely round it, within the hard projecting uterine neck, and trace its narrow root. By gentle traction I found it give a little, and was able to bring it down till its free end reached about two inches external to the vulva. That part of the abnormal growth external to the body presented the appearance of a pale, glossy, membranous bag, not unlike *prolapsus vesicæ;* and, then rolled between the thumb and index finger, felt very like thick layers of mucous membrane. The woman expressed no sense of pain when it was pinched. There was no hemorrhage at this time. Having concluded that it was a case of polypus, and that nature was making an effort to cast it off, I resolved upon leaving it in her hands for a short time, and waiting the result, unless symptoms arose calling for active measures.

"In 24 hours, the mass external to the body had assumed a shrivelled appearance, was dusky in colour, and had begun to emit a gengrenous odour. On traction, it was brought down about an inch further. On the next day it had become perfectly black, and the odour it exhaled was almost intolerable. As the patient evinced symptoms of great exhaustion, I recommended a consultation with Dr. Ramsbotham."

I saw her at 3 p.m. on the 25th. The tumour had then been down nearly three days; the part external was as large as a man's fist; it was highly putrid, and very readily torn; the attachment by the stem within the cervix uteri still remained perfect. The woman was of waxy paleness; her countenance bore a distressed, cadaverous expression; the pulse was quick, jerking, and easily compressible: tongue and lips moist and pale; and altogether she displayed unequivocal marks of having been for a long time the subject of copious losses of blood. I passed two fingers of my left hand well within the os uteri, carried their points up to the attachment of the tumour, and with very little trouble separated the diseased mass from the healthy structures, by tearing it away. When brought away it was about seven inches in length and five in breadth, having the ordinary appearance of the fleshy polypus, partially destroyed by putrefaction. The removal occasioned neither pain nor loss of blood. "About four hours after the operation," says Mr. Stephenson, "the patient expressed herself as being greatly relieved, and seemed to mend and rally from the moment of its removal."

The bowels had not acted for six days, in consequence of the medicine having been invariably rejected by vomiting. On the separation of the tumour, however, the sickness ceased, and the sulphate of magnesia, dissolved in infusion of roses, was speedily efficacious. The tinctura ferri sesquichloridi was afterwards administered, and she was ordered a generous diet and a pint of porter daily. For the first fortnight there was a pale straw-coloured discharge, along with which some shreddy membranous portions came away, evidently the remains of the neck of the tumour.

Four days after the removal the menses returned, at the regular period, but in so small a quantity as "scarcely to stain the linen." On November 23, they again appeared, and continued flowing only three days, though copiously while they lasted. In the interval there was a small quantity of pale yellow discharge. Mr. Stephenson made an examination on November 16. The os uteri was then sufficiently open to admit the passage of the first joint of the finger, but "nothing like the remains of a polypus could be detected." She came down stairs on that day, is rapidly gaining strength and colour, and says herself she has not felt so well for more than two years.—*Med. Times and Gazette, Dec.* 24, 1853, *p.* 648.

157.—*A Case of Large Polypus of the Uterus Complicated with Inversion.* By GEORGE CANNEY, Esq., late House-Surgeon to University College Hospital.—M. H., a stout, fair-complexioned woman, many years married, but without family, has suffered severely during the last seven years from uterine disease, attended with severe pain, floodings, and extremely offensive vaginal discharges. On the 6th of of October, 1848, she was seized, while in bed, about seven o'clock in the morning, with violent expulsive pains, which in a short time, as she thought, protruded the whole mass of the diseased womb through the os externum. Her midwife was sent for, and for many hours made fruitless attempts to return the mass. About five in the evening, I was requested to see her, and found her faint from loss of blood, the surface of the body, and the external genitals, being quite blanched. Protruding from the os externum there was an enormous pear-shaped mass, of a red colour, and smooth, shining surface, which was a perfect cast of the body and neck of an enlarged uterus, (the narrow portion or neck of the tumour being the lowest,) having a dark sloughy appearance; and, to complete the deception, the finger could be passed for nearly an inch into a depression in the lower portion of the tumour. As a catheter, however, passed into the bladder in the usual course, I at once pulled down the mass until the forefinger could be passed over its large extremity into the vagina, when the large end of the polypus could be distinctly felt connected with the inverted fundus of the uterus by a short thick pedicle. A ligature having been applied, the pedicle was divided with a pair of scissors, and the surface of the uterus being found free from any further growth, the inverted fundus was carefully replaced. As soon as the womb was restored to its natural condition, the ligature came away; nevertheless, there was no further flooding; the patient never had a bad symptom; and the gentleman under whose care she was placed reported to me, at the end of a week, that she had resumed her household duties.

The tumour was of a simple fibrous texture, and weighed twenty-four ounces.—*Med. Times and Gazette, Nov.* 12, 1853, *p.* 498.

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158.—*On the Extraction of Polypi from the Uterus.*—[In a paper by Mr. GEORGE CANNEY, of Bishop Auckland, on this subject, read before the Royal Medical and Chirurgical Society, various opinions were elicited on the different modes of extracting these growths from the uterus. Mr. Canney recommends *excision* rather than the ligature when the polypi are not large. DR. TYLER SMITH prefers the *ligature.* Mr. HODGSON says that *torsion* is sometimes both better and safer than either excision or the ligature. DR. COPLAND gives us an interesting case to show the effects of *biborate of soda.* He says]

Polypi, or fibrous tumours, on the inner surface of the uterus, were occasionally thrown off without resorting to the ligature, or any other

operation. Some years ago he had been called in consultation to the case of a lady suffering from constantly recurring uterine hemorrhage. A tumour was protruding from the os uteri. The question of removal was discussed, and it was decided that biborate of soda should be given, with a view of producing the contraction of the uterus, by which the growth might be thrown off. The medicine was given in large doses, and continued for two or three days. The uterus contracted powerfully, and the tumour was expelled. All the symptoms abated for three or four days, when a second tumour presented itself. Dr. R. Lee then joined the consultation, and it was determined that the use of the soda should be persevered in. The result was, that this second tumour, like the first, was thrown off, and the patient recovered. He could speak from his own knowledge, that she was alive and well 13 or 14 years afterwards. This might not have been a case, strictly speaking, of polypus of the uterus, but it was certainly one of a tumour under the villous coat of that organ, which was thrown off by the contractions of the uterus.—*Lancet, April* 8, 1854, *p.* 389.

## 159.—ON THE SOURCE OF HEMORRHAGE IN PARTIAL SEPARATION OF THE PLACENTA.

By Dr. F. W. Mackenzie. (Read before the Medical Society.)

There are few subjects in obstetric medicine of greater scientific interest and none of greater practical importance, than that of the anatomical source of hemorrhage in cases of partial separation of the placenta. Upon its right understanding may be said to depend not only the whole question of the extraction of the placenta, in cases of placenta prævia, but also the general treatment of uterine hemorrhage in all its several forms; and yet there is probably no subject upon so much diversity of opinion prevails, or in regard to which mere speculative notions have been more freely allowed to take the place of original observation. With the view of aiding in the solution of this question, I am induced to submit to the Society some investigations which were specially undertaken for the purpose of elucidating it.

On referring to the published writings of various obstetric authorities, it will be found that three different opinions prevail at the present day respecting the anatomical source of hemorrhage in cases of partial separation of the placenta. The first affirms, that it is principally or wholly uterine; the second, that it is principally or wholly placental; the third, that it is both uterine and placental, the blood escaping partly from the exposed uterine, and partly from the detached placental surfaces.

Further, it will be found that uterine hemorrhage, whether occurring in connection with partial or entire separation of the placenta, is generally considered to be principally venous. "Uterine hemorrhage," says Dr. Simpson, "after the separation of the placenta, in any of the stages of labour, is *not arterial* in its character. The utero-placental

arteries are numerous, but so long and slender as to become readily closed; first, by the tonicity of their coats; secondly, by contraction of the uterine fibres upon the course of these vessels themselves, as they pass through and amid the uterine structure; and thirdly and principally, by the changes in their tissues produced by the mechanical rupture of their coats,—*torn arteries* being little, if at all, liable to bleed, and the placenta being separated by a true process of *avulsion*." "When the placenta is only separated," says Dr. Radford, "the blood which is lost is chiefly venous." "When the placenta is separated partially from the uterus," Dr. Murphy observes, "any hemorrhage must arise chiefly from the broken veins, and not from one but from both of their divided extremities." "It is," says Dr. Robert Lee, "from the great semilunar valvular-like venous openings, in the lining membrane of the uterus, and of the arteries which are laid open by the separation of the placenta, that the blood alone flows in uterine hemorrhage." I have made these quotations for the purpose of showing, that the question at issue is one of a very complex character. It is one which has reference, not only to the organ from whence the blood escapes, but to the particular system of vessels from which it is poured out also.

On reflecting upon these circumstances, I was led to believe that some light might be thrown upon the question, by ascertaining experimentally the source of hemorrhage in an animal whose placenta, like that of the human female, was both decidual and fœtal. A pregnant bitch was accordingly obtained, which had nearly completed the full period of gestation: and it having been placed under the influence of chloroform, the uterus was exposed and opened, and the following observations were made.

1. It was observed, on separating the placenta, that blood flowed freely and continuously from the denuded uterine surface, increasing with the detachment, whilst none escaped from the detached portion of the placenta.

2. That the blood which escaped from the uterus was distinctly arterial, being of a bright arterial character.

3. On rupturing a placenta whilst still partially adherent to the uterus, it was found that a small quantity of dark venous blood escaped from the part torn; but only to a very trivial extent.

These observations were made with different placentæ, and uniformly with the same results.

Thus it would appear, in the canine species, that the source of hemorrhage in cases in which the placenta is partially detached, is exclusively the denuded uterine surface, so long as the placenta is entire: that the hemorrhage which takes place is of an arterial character; and that although a certain amount of blood may escape from the placenta, if lacerated or torn whilst still partially adherent, yet that this is very trivial in quantity, and of a dark venous character.

Considering, however, the different distribution of the veins in the

maternal portion of the placenta in the human and canine species, I am aware that this experiment cannot be regarded as decisive of the source of hemorrhage under similar circumstances in the former. We know, for instance, that in the human placenta, the utero-placental arteries open into large cells or dilated capillaries in the maternal portion of the organ, between which a free intercommunication exists; whereas in the bitch, the venous vessels of the maternal part of the placenta do not constitute a cellular or cavernous structure, but in form and distribution resemble ordinary veins. These circumstances were particularly pointed out by Dr. Sharpey, to whom I communicated the results of the experiment I have related; and in the course of a subsequent conversation he observed that, in his opinion, the best mode of ascertaining the source of hemorrhage in partial separations of the placenta in the human female, would be to obtain a uterus to which the placenta was still partially adherent, to inject the hypogastric arteries with defibrinated blood, and to observe whether it escaped from the uterus, the placenta, or from both.

In the early part of April 1853, I had an opportunity of carrying out this suggestion. A poor woman under the care of Messrs. Clark, Norway, and myself, died of hemorrhage during the progress of a labour, rendered protracted by malposition and impaction of the fœtal head. A *post-mortem* examination of the body was made on the following day, and as it was found that the placenta was still partially adherent, although much of it had been detached, it appeared to me that it would serve the purpose in view. Accordingly the uterus and placenta were removed to University College, where the following observations were made under the immediate superintendence of Dr. Sharpey.

The uterus, which had been cut off somewhere above its orifice, was first carefully inverted, and several loose unadherent coagula were removed from its interior. It had the appearance of being very exsanguine; and on the surface from which the placenta had been detached, the ramifications of the utero-placental arteries could be plainly seen, but free from any plugging or coagula; about a fifth of the placenta was still adherent. In the next place, the vessels along the cut surface of the uterus were secured by ligatures placed along the line of its division, and the hypogastric and ovarian veins were also secured by ligature. An injecting pipe was now fixed in one of the hypogastric arteries, and some defibrinated blood was steadily injected. The results of the operation were as follows. The blood escaped freely from the orifices of the utero-placental arteries, which had been torn across by the separation of the placenta; none escaped from the torn utero-placental veins, nor did any pass away from the placenta. The injection was continued for some time, but with no variation in the results. It was now thought advisable to ascertain the force with which the blood was injected; and tested by the hæmadynamometer it was found not to exceed that of the heart, acting under ordinary circumstances. In the next place, the opposite hypogastric artery was

injected; and in this case it was found, as in the other, that blood escaped freely from the orifices of the torn utero-placental arteries, that none passed out of the utero-placental veins; whilst in this case a small quantity escaped from the surface of the placenta, contiguous to to that which was still adherent. The injection was repeated several times with the same results; the great bulk of the injected blood escaped readily from the orifices of the torn utero-placental arteries, a small quantity only came from the placenta, whilst none could be observed to pass out from the torn utero-placental veins, whose orifices were plainly visible and carefully watched. Nor, it should be added, were the vessels plugged with coagula.

Looking then to the results of this experiment, it would appear that the source of hemorrhage in partial but extensive separations of the placenta is principally uterine, and only slightly placental, and further, that it is arterial rather than venous. It would, however, be too much to assume that the experiments are conclusive as to the source of hemorrhage in all cases of placental separation. It must be remembered, that in this case the placenta was very greatly detached, and as, consequently, little blood only could have entered it, much could not be expected to have escaped from it; whilst, again, the tonicity of the arterial system could not have been great during life, as evidenced by the little resistance offered by the utero-placental arteries to the escape of the blood injected. Admitting, however, the full force of these and other considerations, it yet appears to me that the results of this experiment, coupled with those of the one previously related, and taken in connection with various clinical facts, afforded strong grounds for the belief that the *principal* source of hemorrhage in cases of partial separation of the placenta is uterine rather than placental, and arterial rather than venous.

What then it may be asked are the grounds upon which it is affirmed that these hemorrhages are respectively either venous or placental? The best reply to this question is probably that given by Dr. Simpson, in the passage I have quoted from his writings. "Uterine hemorrhage," he observes, "after separation of the placenta in any of the stages of labour, is *not arterial* in its character, because the utero-placental arteries are so long and slender as to become readily closed: 1. By the tonicity of their coats. 2. By contraction of the uterine fibres upon them. 3. Principally by the changes in their tissues, produced by the mechanical rupture of their coats." These probably constitute the entire grounds upon which the opinion in question is maintainable; and I will therefore proceed to consider respectively their nature and validity.

1. The assertion "*that uterine hemorrhage after the separation of the placenta in any of the stages of labour, is not arterial in its character,*" is one which, so far as I am aware, is not only unsupported by any evidence, but directly at variance with many trustworthy observations. On the 23rd of September, 1853, I had an opportunity of

investigating this point, and of satisfying myself that the hemorrhage which took place from the uterus, between the birth of the child and the expulsion of the placenta, was distinctly of an arterial character. On the 10th of October, 1853, whilst in attendance upon a case of labour, my attention was directed to a rather profuse flow of blood which followed the birth of the child; and I observed, as it passed over the vulva, that whilst the greater part was of a bright arterial colour, a small portion was of a dark venous hue; the striking difference in the colour of the two portions left no doubt in my mind that they were respective arterial and venous. The same thing was observed in the experiment I have related, in which the placenta was detached from the uterus of the bitch. The blood which flowed freely from the denuded uterine surface was of a bright florid colour, and such as to convince both Mr. Marshall and myself that it was arterial. I further find that the observations I have myself made, as to the character of the blood lost in uterine hemorrhages, are similar to those which have been made by other medical men; and therefore, in the absence of my evidence to the contrary, we may, I think, conclude that uterine hemorrhage after the separation of the placenta is rather of an *arterial* than a *venous* character.

2. The second point affirmed is "*that arterial hemorrhage from the uterus is prevented by the tonicty of the utero-placental arteries.*" It is far from my intention to assert that, in a state of health and tranquillity of the circulation, this is not the case; but, under other circumstances, it may be doubted whether the principle in question can be relied upon for the attainment of this object. The tonicity of the arteries, like every other vital property, is liable to be modified or affected by a variety of circumstances; and, regarded as a modification of the principle of contractility, may be supposed to be influenced by the same general causes; to be increased by those which tend to augment the strength and vigour of the body, diminished by those which tend to enervate or exhaust it, and disturbed by those which tend to disturb the nervous and vascular systems. Now, if we consider the circumstances under which uterine hemorrhages are most liable to occur, we shall find that they are respectively those which tend to enervate or exhaust the constitutional powers on the one hand, or morbidly excite or disturb the vascular system on the other. One of the most alarming cases of *post partum* hemorrhage which I have ever witnessed occurred in the wife of an eminent obstetric physician, whose nervous system and energies had been prostrated by the unexpected death of her mother about three weeks before the accession of labour. The poor woman, whose uterus was the subject of the experiment I have related died of internal hemorrhage consequent upon partial separation of the placenta, when her strength had been exhausted by long parturient efforts; and numerous cases are related of fatal hemorrhages occurring in women who had been previously anæmic and weakly. On the other hand, every practitioner must have met with profuse uterine

hemorrhage in connexion with morbid excitement of the heart and circulation; and hereafter it will be shown that, of the causes of such excitement, some have a sympathetic, and others a direct mode of operation. Further, I may appeal to the condition of the utero-placental arteries in the case of the patient who died of uterine hemorrhage, as showing that no plugging or particular contraction of them had taken place during life. Here indeed was a physical demonstration of the condition of these vessels, as they must have existed during life, after fatal hemorrhage consequent upon partial separation of the placenta, the placenta having been separated during life: and if it can be clearly shown, as it was, that they had neither been so contracted or plugged during life as to prevent the escape of blood from them when injected with no more force than that of the heart's action after death, then it must follow, that neither could they have prevented the escape of blood from them during life, when injected under the ordinary force of the circulation. On these grounds, then, we may venture to doubt the correctness of the dogma, that the tonicity of the utero-placental arteries is, under all circumstances, capable of preventing the escape of blood from their orifices when torn across by the separation of the placenta.

3. In the next place, it is affirmed, "*that hemorrhage from the utero-placental arteries is prevented by contraction of the uterine fibres upon the course of these vessels, as they pass through and amid the uterine structure*"—a doctrine which is manifestly at variance with the well known fact, that there is often no direct relation between the degree of uterine contraction and the degree or tendency to uterine hemorrhage. "The observing practitioner," says Dr. Gooch, "must have been frequently struck by the little proportion that existed between the want of contraction and the degree of hemorrhage; having found the uterus bulky without any hemorrhage, and a profuse hemorrhage without greater bulk of uterus. Nay, further, I have witnessed a profuse hemorrhage, though the uterus had contracted in the degree which commonly indicates security; and I have ventured to do what is seldom justifiable, separate the placenta before the uterus had contracted, without more hemorrhage than after a common labour." The correctness of these remarks, and their pertinency to the question under consideration, must, I think, be generally admitted; but besides these, two other series of facts may be adduced, in opposition to the doctrine above propounded. First, that, in several instances, the placenta has been spontaneously or artificially separated from the uterus before the birth of the child, and, consequently, under circumstances in which contraction of the uterus could not take place, without any hemorrhage supervening; and secondly, that, when it has been attached to the os and cervix uteri, its separation has been effected in many cases without any particular hemorrhage resulting, although it is affirmed by some anatomists, that there are few or no contracting fibres in the structure of the os and cervix uteri.

4. The last proposition affirmed—"*that hemorrhage from the utero-placental arteries is prevented by the changes in their tissues produced by the mechanical rupture of their coats, torn arteries being little or at all liable to bleed, and the placenta being separated by a true process of avulsion,*"—is completely invalidated by the results of the experiment performed upon the pregnant bitch, which I have described in the former part of this paper; for, on detaching the placenta from the uterus, and thereby lacerating or tearing through the utero-placental arteries, arterial hemorrhage was observed to follow. That is to say, having separated the placenta by a true process of *avulsion*, it was demonstrated that such proceeding was not productive of those changes in the torn coats of the utero-placental arteries which are assumed to follow such operation, and by which, it is alleged, arterial hemorrhage is prevented. And, to appreciate the full force and importance of this fact to the present inquiry, it is necessary to bear in mind that the placenta of the canine, as of the human species, possesses a maternal as well as a fœtal portion; that the utero-placental arteries in both pass from the uterus into the maternal portion of the organ, as do the utero-placental veins from the latter to the uterus; and that the chief difference in the anatomical structure of the two organs consists in the different distribution of the veins in their maternal portions. Accordingly, it must follow, that a separation of the placenta must equally give rise to a laceration of the utero-placental arteries in both species; and if it is clearly shown that hemorrhage from these arteries is not thereby prevented in the one, it must follow that it cannot thereby be prevented in the other.

I have thus critically examined the several grounds upon which it is alleged that hemorrhage does not occur from the torn utero-placental arteries in cases of partial separation of the placenta; and, having shown the insufficiency of the data upon which this doctrine has been assumed, I proceed to observe, that if blood does actually escape from these vessels, it must follow that proportionately little will escape from either the uterine veins or the placenta; because, according to the well known laws of hydraulics, fluids circulating in closed vessels will only continue in their regular course when due pressure is maintained upon them. Now, under the circumstances stated, this condition is not fulfilled; and, accordingly the greater part of the blood entering the utero-placental arteries will escape from their open orifices, rather than be continued onwards into either the uterine veins or placenta. In this respect, it must be borne in mind that the character of the utero-placental circulation must materially differ before and after separation of the placenta. In the former case, the pressure upon the circulating blood is equalised throughout; whereas in the latter, it is unequally distributed, and accordingly there will be a tendency to hemorrhage where this pressure is removed, or wherever openings exist in the utero-placental arteries.

The correctness of this view is further supported by a variety of

circumstances, which go far to prove that the principal source of hemorrhage in these cases is neither the uterine veins nor the placenta. As opposed to its placental origin, I may mention: First, the character of the blood lost; which, as I have stated, is principally arterial, rather than venous. Secondly, the rapidity with which the blood escapes, and its fluidity in many cases of puerperal hemorrhage, would tend to show that it was rather poured out directly from the utero-placental arteries, than indirectly from the placenta. Thirdly, the peculiar cellular, cavernous, or reticulate structure of the maternal portion of the placenta, may be referred to as being calculated to prevent placental hemorrhage, by producing stagnation and coagulation of the blood in this part of the organ, when separated from its vascular connexion with the uterus. Fourthly, the occurrence of profuse hemorrhage after the entire separation of the placenta, both before and after the birth of the child, may be referred to as showing that it has no necessary dependence upon this organ. Fifthly, the small amount of blood which escaped from the placenta when the utero-placental arteries were injected in the experiment I have related, affords strong evidence against the placental origin of these hemorrhages. Whilst, sixthly, the escape of blood from the orifices of the torn utero-placental arteries, by lessening the quantity of blood which would otherwise enter the placenta, affords an additional argument against their placental origin.

As opposed to the venous origin of the hemorrhage, I may adduce the following facts: First, that the blood lost is for the most part not venous. Secondly, the absence of hemorrhage in many cases, in which those conditions exist which are most favourable to the occurrence of venous hemorrhage, namely, relaxed and distended states of the uterus. Thirdly, the absence of hemorrhage in many cases in which the placenta has been attached and separated from the os and cervix uteri; where the contractile mechanism of the uterus does not exist, by which it is alleged venous hemorrhage is prevented. Fourthly, the occurrence of profuse hemorrhage when the uterus is contracted, and when consequently the uterine veins must be firmly compressed. Fifthly, the escape of blood from the orifices of the torn utero-placental arteries; which would equally tend to prevent venous as well as placental hemorrhage. Sixthly, the fact that no blood was observed to flow from the uterine veins when the utero-placental arteries were injected in the experiment I have related. Seventhly, the normal course of the uterine circulation being from the uterine veins to the vena cava, it must follow that venous hemorrhage can only occur as the result of a retrograde, and consequently abnormal, movement of the blood.

Upon the whole, then, two things would appear to be certain: first that no *necessary* relation exists between the degree of hemorrhage and, the degree of separation of the placenta; or, secondly, between the degree of hemorrhage and the degree of contraction of the uterus; uterine hemorrhage having been variously moderate or excessive under similar

degrees of separation of the placenta, and similarly moderate or excessive under the opposite conditions of relaxation and contraction of the uterus. Can it then be doubted that the absence of, or disposition to uterine hemorrhage must depend, in many cases, upon other causes than the anatomical connection of the placenta with the uterus on the one hand, or the contractile mechanism of the uterus on the other, or further, that these are to be sought for in the occurrence of arterial hemorrhage, and the various conditions of the utero-placental arteries, as modified by the general condition of the arterial system? Bearing in mind this view of the case, we can understand how it may happen that, the tonicity of the arterial system being great, uterine hemorrhage may be prevented when the uterus is most relaxed and when consequently the conditions most favourable to venous hemorrhage exist; that under the influence of morbid excitation of the heart and arteries, it may be profuse when the uterus is contracted, and when, consequently, venous hemorrhage would be most effectually prevented; and that its degree may vary in different cases with the same amount of separation of the placenta. Let me however be distinctly understood as speaking of *pathological*, rather than of *physiological* puerperal hemorrhage, and of its *principal*, rather than of its *exclusive* source; because on the one hand, it can scarcely be supposed, that the placenta can be separated from the uterus, under the most favourable circumstances in child-birth, without some hemorrhage resulting, which therefore cannot be regarded as pathological; nor on the other, can it be supposed that such hemorrhage should be derived exclusively from the torn utero-placental arteries. It has indeed been experimentally shown that some blood does actually escape from the detached portion of the placenta when the hypogastric arteries are injected, and the quantity so escaping will doubtless vary in different cases, and I have referred to an observation in which venous blood was discharged mixed with arterial, in a case in which hemorrhage preceded the expulsion of the placenta. It is therefore highly probable, that in all cases the source of hemorrhage is of a mixed character. But, looking to its source in those which are so considerable as to endanger the safety of the patient, it appears to me that the facts adduced are sufficient to justify the conclusion that it is principally arterial; and that, although blood may simultaneously escape from the utero-placental veins and placenta, the quantity lost by these channels considerably falls short of that which escapes from the torn utero-placental arteries.

In conclusion, we may, I think, deduce from a consideration of these facts some rules of practical importance in the treatment of puerperal hemorrhages, whether occurring in connection with partial or complete separation of the placenta. In particular we may learn the importance of treating them upon broader principles than those derived from a consideration of the condition of the uterus or the degree of separation of the placenta; and the necessity of investigating carefully the physiological and pathological states of the nervous and vas-

cular systems, both before and during labour, with a view to the adoption of measures of a preventive as well as curative character. It is not my intention to enter at length upon this subject; but a brief reference to the principles upon which the prevention of puerperal hemorrhage should be attempted, will not be inconsistent with the object of this paper.

Apart from the anatomical condition of the uterus and placenta, it it will be found in practice that hemorrhage during labour is liable to be excessive, in connection with two opposite states of the vascular system. In the one, there is morbid excitement of the heart and arteries, directly or sympathetically induced; in the other, there is a state of extreme depression of the circulation dependent either upon atony of the blood vessels, or an impoverished condition of the blood. As both these conditions may exist and be recognized before the accession of labour, I will briefly advert to the curative indications they suggest.

Hemorrhage occurring during labour, in connection with inordinate excitement of the circulation, has been well illustrated by Dr. Gooch, as well as the treatment it requires, in his paper on a peculiar form of hemorrhage from the uterus. The patient before the accession of labour was flushed, and had a very full quick pulse. Abstinence from meat, wine, and warm drinks, a cool room, and a saline purgative, diminished but did not remove this state of the circulation, which continued in a considerable degree when the child was born. It was expelled very gradually, and after the removal of the placenta the uterus felt contracted in the ordinary degree. Nevertheless, about twenty minutes afterwards, there came on one of the most frightful hemorrhages, which Dr. Gooch observes, he had ever witnessed. Twelve months afterwards he attended the same patient in a subsequent labour, and was struck on observing the same state of circulation which had preceded the first. The labour proceeded naturally, but was again followed by profuse and alarming hemorrhage. Reflecting upon these facts, Dr. Gooch was led to believe that the hemorrhage depended not upon want of contraction of the uterus, but on want of tranquillity of the circulation; and he concluded if she again became pregnant, that a mode of treatment which would cause her to fall in labour with a cool skin, and quiet pulse, would be the best means of preventing a recurrence of the accident. In due time he had an opportunity of testing this practice; and although in the first instance he was unsuccessful, yet in another, by means of an abstemious diet, saline aperients, and the moderate abstraction of blood from the arm before delivery, the labour was completed without the smallest degree of flooding or faintness. The principle upon which this variety of uterine hemorrhage should be treated, is sufficiently indicated in these details.

In a second series of cases, it has appeared to me that hemorrhage during labour has been immediately dependent upon a disordered

state of the circulation, excited by functional derangement of the liver and digestive organs. Such patients suffer for some time before labour, from constipation, flatulence, and other symptoms of indigestion; and if the stools are examined, they are found to be of a pale, or clay colour.

Profuse hemorrhage under these circumstances may either immediately follow the birth of the child, or may continue to recur for some time after labour. In two instances recently attended by me, profuse hemorrhage followed delivery; and in both the state of the hepatic functions was such as I have described. The recurrence of hemorrhage led to an examination of the stools; in each case they were found to be clay coloured, and almost destitute of bile; and on restoring the action of the liver, the disposition to hemorrhage was in each case removed. From these facts I have been led to believe, that many instances of puerperal hemorrhage might be prevented by inquiring into the condition of the liver and digestive organs before labour, and adopting such means as would rectify any derangement which might exist.

The second class of cases I have referred to, are those in which puerperal hemorrhages occur in connexion with an enfeebled state of the circulation; and this, inasmuch as it may have existed long antecedently to labour, is eminently amenable to preventive measures of treatment. It is met with in females whose physical health has been deteriorated or depressed by bodily disease, laborious or unhealthy occupations, or mental anxiety, and comprehends a very numerous category. In these, either from atony of the blood vessels, or an extreme fluidity of the blood, but little or no barrier is opposed to the escape of this fluid; and if preventive treatment has not been adopted, but little good will sometimes result from any other. In all such cases the treatment should be of a prospective character, and directed to the improvement of the health before labour by the employment of such measures, hygienic and medicinal, as will amend the condition of the blood and augment the tone and vigour of the arterial system. In proportion as anemia preponderates, iron will be indicated; where atony of the nervous and vascular systems is the more prominent condition, strychnia should be preferred; whilst in cases in which both these pathological elements coexist, a combination of both remedies will answer best.

As regards curative treatment, I would wish more especially to direct attention to the advantages likely to be derived from the employment of galvanism in these cases; not indeed, locally applied to the uterus, but employed in a more general and diffusive manner, with the view of imparting increased tone to the arterial system at large. This, I believe, may be accomplished by passing somewhat powerful single currents from the upper portion of the spinal cord through the uterus. The opportunities I have had of observing the action of galvanism in obstetric practice, induce me to think favour-

ably of it in these cases, and some investigations commenced with the view of determining its power in arresting arterial hemorrhage support this opinion: whilst it must not be forgotten, that several cases have been published in which uterine hemorrhage has been thus speedily arrested. I will only add, that if my view of the source of hemorrhage in cases of partial separation of the placenta is confirmed, it will prove a most valuable auxiliary in the treatment of placenta prævia; simultaneously tending to the arrest of hemorrhage, and the dilatation of the uterus.—*Association Medical Journal, Dec.* 23, 1853, *p.* 1127.

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160.—*Treatment of Hemorrhage from the Navel of New-born Children.*—Ordinary remedies are insufficient to arrest the bleeding. Kolophonian, alum, the various styptic fluids, turpentine, ice, amadou, compression, &c., have been employed in vain. Cauterization has been several times tried, both with the nitrate of silver and the actual cautery. In fact the use of the ligature appears to be the only means worth dependence upon as capable of restraining the bleeding, and the mode of its application *en masse*, as advised by Dubois, is to be preferred. But in the best manuals and treatises we find no advice given as to the method of securing immediately the umbilical arteries, and, so far as we know, it has never been accomplished, from the many difficulties attendant upon its performance. It has therefore been proposed to secure all the three vessels together, by pulling the navel-knot forward, and passing around it a ligature with the help of hare-lip pins. At first sight this operation seems to have much in its favour, though experience does not confirm it. Nevertheless up to the present time it has been of most service.—Roger, *in Journ. f. Kinderkhtn. Lancet, Feb.* 11, 1854, *p.* 160.

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